Postscript

Image from the exhibition *Subtle Thresholds*, reproduced with permission of the artist, Fritha Langerman.

The observing gaze refrains from intervening: it is silent and gestureless. Observation leaves things as they are; there is nothing hidden to it in what is given. The correlative of observation is never the invisible, but always the immediately visible, once one has removed the obstacles erected to reason by theories and to the senses by the imagination.

Foucault, The birth of the clinic. (1975: 107)

Trees, webs and explosions: The analogical imperative in the politics of knowledge

Fritha Langerman

As a visual practitioner, it is often asked of me how visual art is to be understood as *research*. Of course, what underlies such a question is the assertion that all visual practice is subjective and emotive, and cannot possibly be held to the rigours of other intellectual endeavours. Yet, as is suggested by the title of this book, *Medicine and the Politics of Knowledge*, knowledge is contingent rather than intrinsic. While method and structure are implicit within any inquiry, visual art has different methods and is able to appeal to allegory, humour and irony, tools that are not within the ambit of scientific discourses. It is also able to self-consciously reflect on its own practice and collapse spatial and temporal linearities by combining vastly disparate materials, images and references in ways that extend beyond regionalism and locality. The rejoinder to the probe is most often 'that which can only be known through practice', and while this may be becoming a truism, it suggests that art is a means of knowing that is deeply invested in active knowledge, in the experiential, the sensorial and the associative. Visual practice embraces a methodology that is at variance with typical textual arguments. It is syncretic, it layers, veils, creates juxtapositions and sets up a multitude of suggestions rather than conclusions. In accordance with this way of working, the text of this chapter darts and dives, making and breaking connections, and should be read in parallel with the exhibition images.

Subtle Thresholds, an exhibition of prints, objects and collections, is primarily concerned with the visual representation of infectious disease, both in popular imagination and in medical literature, and the language surrounding disease, which relies on the binary oppositions of clean/unclean, known/alien and sterile/contaminated. The history of epidemiology reveals the interpretation of infectious diseases in the West as arising from outside European borders – as immigrant, foreigner and invader – reinforcing what Sander Gilman (1988) refers to as the fixity of disease as a constant other. The installation reflects on how constructions of 'difference' have served to mediate the cultural and political understanding of pathology, and on the ways in which visual analogies of disease inform the

visualisation of disease as a space of separation through which the patient becomes identified by illness.

With reference to material drawn from *Subtle Thresholds*, this chapter attempts to identify how visual geometries operate as a symbolic rhetoric in knowledge claims, how they may alter the perception and interpretation of that information, and how schematic analogies perpetuate ideas about the world. I argue that visual models intercede with the world and become the seductive keepers of knowledge. The argument here ought to be read in dialogue with the larger project, which reflects on the politics of taxonomies and on the ways in which linear modes of representation and analogy emerged in book form and found their way into museum exhibits, and which asks whether the recent shift in the visual analogy for evolution from the tree to the web of life may impact on the presentation of information in museums.

Barbara Maria Stafford's book *Visual Analogy* makes complex connections between science and art, proposing that in Western thought there has been no language to describe resemblance, only 'an exaggerated sense of difference'. She writes of analogy:

> [By taking us] to the associative origins of human thought, analogy offers a non-algorithmic technique for binding our perceptual system to our cognitive systems, expressed in terms of similarities and antithesis. Learning, in this development scheme, does not spring from a chain of reasoning, but from a dynamic back-and-forth motion among choices that embrace the entire universe in their scope.
> (Stafford 1999: 176–7)

For Stafford, then, analogical thinking is a means of sense-making that is ultimately comparative and based in systems of equivalence; however, there can be no sense of similarity without the corollary of difference. As Stafford indicates, this has been the dominant means by which Western thought has been ordered. Analogy is the relationship between word and image – the proportion that exists between two things – a system of ordered relationships articulated as similarity in difference. *Subtle Thresholds* concerns itself with representational taxonomies, in which taxonomy codifies a system of order based on difference. The word's etymology, from the Greek *taxis* (order or arrangement) and *nomos* (law or science), suggests this to be an inflexible system, and one that is ultimately hierarchical. Taxonomic thought has driven the visual presentation of biological collections and display, both within the book and museums, and it has developed persuasive visual metaphors to carry these ideas.

As a printmaker, I have found that my understanding of the world and my approach to the construction of exhibitions is mediated by and responsive to the

underlying tenets of the discipline of printmaking itself. The print in book form has been instrumental in the perpetuation of linear models of knowing the world. Not only were ideas of classification, taxonomy and evolution communicated through the book, which formed part of the reproduction and replication of those systems, but underlying linearities were supported by the codex structure, presenting a constrained and hierarchical ordering of material, not least of all linked to its origins in the church. The codex book is both binary and sequential in its form. The symmetry of the open book means that pages are viewed in relation to each other, while the inclusion of the frontispiece and colophon in more traditional books 'sandwich' the contents between an explanatory narrative and a textual reflection. The conventions of the structure and divisions imbue it with a temporality, as, through a slow process of disclosure, its contents are revealed over time. Enlightenment thinking is inextricably bound to print as both a political innovation and a creative practice, as it suggests ways of influence and a pattern of thought that is, again, based on binary referents – of an archive and its text, of object and image, and of image and text. Print is always bound to an 'other', a state outside of itself, in a discipline of oppositions: matrix and impression, original and reproduction, negative and positive, oil and water, depth and surface.

Western knowledges have been plagued by a seemingly contradictory desire to represent encyclopaedic systems within formats that resist fluidity. This is apparent in the early medieval ordering system, the *Imago Mundi,* which aimed at representing a compendium or cosmology of the known world (the creation and the created) within a geometric order of concentric circles and associated numerical clusters of symbolic significance. Through brilliant, illuminated images, 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 schematics of the *Imago Mundi* provided a reliable, if reductive, means of knowledge dissemination by which a closed, finite theology was communicated to those to whom the written word was inaccessible.

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

The popularity of the tree as an analogue spans cultures, religions and time, yet is traced most obviously to its antecedent as both the biblical 'tree of life' and 'tree of knowledge'. This dual analogy introduces both genealogical kinship and epistemology. By enjoying the fruit of knowledge, immortality was sacrificed and through biological propagation the first tree of kinship begun. Genealogy is encapsulated by the tree schema as it provides a clear system for recording both succession and relationships over time.

In communicating bodies of knowledge, science has often had to rely on images to carry complex ideas, and it is these visual analogies that hold persuasive power, occupying a central role in the formation of public perception. Images are able to mask points of obscurity within theoretical explanation and provide a unified gloss – an image of integration and completion, and an imaginary synthesis. The 'tree of life' is one of the most pervasive visual analogies and its strong graphic syntax presents two significant structural problems: its ascendant linearity and its branching, divisive structure. Both of these have legacies within colonial discourse and it is the inheritance of these analogies of Linnaean and Darwinian divisions and classification systems that have allowed for the separation into racial categories and types. Darwin's 1859 diagram of a tree to explain natural selection is vertical in orientation, recent time being represented at the top. It has been suggested that this orientation is not as much a feature of progress as it is an inheritance of his geological background, in that the vertical stratigraphy represents near time at the surface of rock formations. German biologist, Ernst Haeckel's tree of 1876, on the other hand, traces a deliberate route from monera at the roots to *menschen* at the uppermost tips of the tree. While more contemporary representations of the circular phylogenetic tree may go some way to overwriting this entrenched visual image, its structure remains binary, branching and, as such, differential. Stephen Jay Gould has written extensively on the representation of evolution, and in his *Wonderful Life* refers to it as an 'iconography of expectation', arguing that all visualisations of evolution reinforce a 'march of progress' and serve to entrench a 'comfortable view of inevitability and superiority' (Gould 1989: 28). He identifies each evolutionary tree as having two distinct morphological features: monophyly, in that each has a unique basal trunk; and divergence, in that all branches either die or divide further. He states that the false iconography of the cone-like tree of increasing diversity conflates placement in time with complexity and development in a judgment of worth. In echoing Darwin's description of life in *Origin of Species* as an 'entangled bank', Gould suggests that the complexity of the tree is possibly captured better by a 'complex bush'.

The topological[1] design of the tree provides a stability and reassurance, as the character of organisms (objects) as singular, reliable entities means that they may be compared and organised with predictable outcomes. However, the oppositional nature of taxonomy, built on similarities and differences, is currently believed to be

contrary to speciation, which is both relational and contingent on space and time (Zimmer 2008). Also, recent developments in bio-informatics, and the rate at which genomes can be decoded, have allowed for complex interspecies comparisons to be made.[2] 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 & Martin 2006; Doolittle 2000). 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, thus undermining the vertical descent/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) (Lawton 2009), and although clearly the phenotypical expression and cultural understanding of individual species remain intact, their chimerical genotype undermines the belief that species evolve determinately from a single point. What this does is to dislodge the sanctity of coherent, independent entities, collapsing hierarchies and tipping humans from their apex. In addition, this may allow for the possibility of representing other complex behavioural interactions that may influence speciation.

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, because in arboreal iconography, each node divides irrevocably into finite objects, whereas in web or net iconography, objects are fluid, and subject to reattribution and change. The reading of biological and biomedical visual and material culture may be subjected to the same revisions. In doing so, chains of reference may be unravelled and objects and images become ambiguous and multi-referential, this shift in design suggesting a major recalibration in the construction of knowledge systems. While this may be true, there is perhaps something more subtle in the oscillation between these systems that can be evidenced in the history of collections and display.

Since the early modern period, this history reveals the underlying assumption that objects are significant and able to convey meaning, and that their particular arrangement is able to influence thinking about the world. During the late Renaissance, objects were organised according to points of similitude; during the Enlightenment, difference became the primary organising principle. When examining a potential shift in the iconography of evolution from web to tree, I translate this as a return to an interest in the connectivity and similarity between artefacts rather than the divisive structures of Enlightenment order. The web allows for an openness and generosity of interpretation.

The part museums have played within the colonial project needs no introduction. The development of museums is often recognised as running parallel to the

rise of national and political consciousness, as museums were seen as a means of actualising power through object wealth. Similarly, collections were used to reinforce ideological positions that collapsed science into forms of social control.[3] It is also largely accepted that science museums have a particular link to authoritative classification and valorised forms of knowledge, as they have promoted an ideology of progress and mastery over nature as well as appealing to notions surrounding beauty and discovery (Jordanova 1989). In this way, they intrinsically perpetuate the ascendency theories embedded within evolution and tree iconography. The current 'crisis of representations' within museums has arisen precisely because it is acknowledged that museums have been complicit in perpetuating certain understandings of taxonomic knowledge and that the strong metaphors which directed previous curatorial and display decisions can no longer be used to interpret current theory.

Yet, collecting is not all bad. Collecting as a practice is deeply invested in ways of knowing and perceiving, and is reliant on a dialogical relationship between objects. Bruno Latour (1987) stresses that it was precisely the physical proximity of massed objects within collections that allowed early biologists to reimagine the formal and conceptual relationships between them. Sixteenth-century cabinets of curiosities (or *Wunderkammers*) were based on extreme proximities and adopted an organising principle based on resemblance, complex linkages and divine logic (Macdonald 2006). Objects were de-contextualised and ordered according to their 'intrinsic' meaning and symbolic value, and the 'poetic' rearrangement of objects was encouraged to provoke conversation and reveal a divine code. The contiguity of the curiosity cabinet was a consilience – a literal connecting of dislocated objects and specimens from unrelated disciplines. This may be seen as a precursor of assemblage, a strategy that will be discussed later.

Ken Arnold (2006), 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 entities – the emergence of display – and simultaneously required a new system of naming by which things could be unambiguously understood. The visual, thus, was held above the textual as a means of knowing. Within 'houses of learning' objects were arranged so as to make visual arguments, and meaning was entirely contingent upon the perceived relationships between them.

The shift from cabinet to museum has been seen as a change in representational spatiality – an epistemic shift as the move towards a system of order based on observation and physical evidence of objects (comparative binaries of observable differences and similarities) ran parallel to the development of institutionalised spaces of collection (MacGregor 2007). Objects were seen to receive meaning from their relationship to the rest of the collection rather than from their own intrinsic

value and were contextualised in comparison to others. Difference, thus, became the centre of taxonomy and classification.

This system of ordering again reflects the structure of the book, in this instance Diderot and d'Alembert's *Encyclopédie* (1751–1766), which aimed to classify and categorise everything about the known world. The structure of the printed publication had an obvious impact on the manner in which information was understood, its contents organised according to a 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 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.[4] This relative freedom to build associative relationships was not as easily realised by the restrictions of 18th-century museum display. This was more in keeping with Linnaeus's synchronous publication of *Systema Naturae* (1735–1767), which introduced the notion of a linear classificatory tree stretching from Eden until present time. In museums, the realisation of this intensive ordering and labelling project took the form of serialised cases that were able to manifest physically taxonomic knowledge. Rational, unequivocal labels bound objects to provenance and attribution. Sigrid Weigel (n.d.) believes that the shift in the 1800s from a classificatory system (listing) to a genealogical one (tree distribution) presents a tension between systematic and temporal ordering modes. She argues that while classification relies on the constancy of species (determined by difference), evolutionary genealogy relies on variation that allows for change (determined over time), and that these two systems are incompatible. However, Linnaean taxonomy, while not temporal, presents a tree-like schematic hierarchy of species that is implicitly developmental. Both of these systems rely explicitly on a structure of difference, and within that structure is a predictable binary symmetry. I believe that it is the predictability of this structure that has made the tree such an enduring icon.

Returning to the exhibition, *Subtle Thresholds*, the project rests on the belief that active curatorship is able to dislodge previous patterns of viewing and understanding, and that through finely orchestrated relationships objects can sound, if not speak, independently of any authoritative text. It makes reference to Linnaean taxonomy and cladistics, yet uses a lattice of conceptual and visual cross-referencing to undermine this oppositional understanding of species. Cultural and linguistic description and codification present humans as a discrete species, with defined boundaries. Yet, infectious disease offers a meeting point, as disease is not something distinct and of itself, but is dependent on a relationship between a host and an organism in order to exist, and is evidence of an ongoing inter-speciation. Once a deep connectivity between humans and other species is acknowledged, all structural hierarchies collapse.[5]

Images from the exhibition *Subtle Thresholds*, reproduced with permission of the artist, Fritha Langerman.

In order to disrupt the stigma and fear typically associated with disease, the exhibition embraces two curatorial strategies: wonder and layering. The light boxes and complex lattice defer to Stephen Greenblatt's (1991: 49) 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'. The intention is that using this language as the interface between the viewer and the representation of disease invites a point of contact that promotes further discussion or investigation.

It co-opts layering and repetition of form through visual 'hyperlinks' to expose the interconnectivity between organisms, worldviews and mythologies. 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 sensorial apprehension of the material alongside a more traditional reading of details within it.

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 on bacterial forms, a framed inventory of mythical diseases caught from animals, a 70-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 an example, Darwin's diary entry of 1835 describes in chalk the moment of being bitten by the beetle known to cause Chagas disease. This date is picked up in a yellow signage plate giving the co-ordinates of Mendoza, Argentina, where the disease was contracted, and is further sited in the cabinets within a printed board attesting to Darwin's diary of health a few years prior to writing *Origin of the Species* (1859); in addition, there is a cabinet, sandblasted with a diagrammatic form of his tree of life, and in another cabinet old chemistry bottles are labelled with the causes of death of 15 naturalists, Darwin being one.

Thirdly, there is a layering in the means through or by which reading occurs: the reading of disease through distinct disciplines (for example, diagrammatical viruses are manifest in pharmacological laboratory plastics); the material through which reading takes place (for example, chalk texts reflect the personal, mythical and philosophical reading of the diseased body); the limited access to text (for example, 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 animal specimens are labelled only by the diseases they carry.

Images from the exhibition *Subtle Thresholds*, reproduced with permission of the artist, Fritha Langerman.

In addition to layering, the exhibition co-opts a system of dualisms. The gallery is simultaneously read as a cathedral and as a laboratory. The angelic wings are constructed from silhouettes of art historical and popular images of healer's hands and, while the shape formally references a schematic tree, 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 simultaneous co-option and rejection of binary structure is a direct response to both the tree and web as analogous ordering systems. The iconography of the tree is a fairly inflexible frame. In an extension of the metaphor, it is essentially a nurturing image, which provides shade and protection, yet its foliage may disguise its underlying structure. It is both ascendant and descendent, and its bilateral symmetry implies an inherent sense of order, whereas, if in a Cartesian framework, order is taken to be positive, the web has negative connotations. It is complex and disorganised, simultaneously fragile and furtive and, rather than inviting, is a means to entrap. I mention this as the multivalent associations embedded within visual analogies have import for their endurance as cultural metaphors. It is impossible to speak of tree and web without reference to Gille Deleuze and Felix Guattari's (1987) writings on arborescence and rhizomatics. Clearly, the tree corresponds to arborescence, a hierarchical organisation of thought, demonstrating centres of significance and subjectification. It is defined and connected, whereas rhizomatic systems take into account that ideas are dynamic. The web as a schematic of speciation may not correspond entirely to the rhizome, which is seen as fuzzy, indeterminate and, thus, able to connect to other systems, yet the sense that there is a wide scattering of knowledge, which slowly becomes part of a more coherent system, is certainly closer to the visual rationale that was applied to *Subtle Thresholds*.

A more useful trope to apply to the construction of the exhibition may be assemblage, and although this loosely refers to Deleuze and Guattari's (1987) term as a non-linear, fluid and adaptable method of knowing, it also has specific art historical roots. As a modernist device, assemblage is an extension of collage, and its extreme contiguity brings together a range of seemingly incompatible objects and images. Assemblage is synchronic and relies on the symbolic reading of relational material values and forms. Robert Rauschenberg is perhaps one of the most famed assemblage artists, combining found objects with printed material and paint. He relied on a vast range of visual resources or what Rosalind Krauss (1999) referred to as a 'perpetual inventory', from which he was able to create complex networks of associations. What this does emphasise is that visual art provides one of many ways of knowing. It is this active place of association, this productive space of emergent ideas that can be useful for the future of museum display. Assemblage is, of course, also an archaeological term used to describe a range of artefacts found in the same location or context – in this instance assemblages are seen to represent singular moments, cultures or industries. In viewing indeterminate objects in close proximity, assemblage suggests both a dematerialisation and an emergence.

Assemblage is sympathetic in that it sets up objects in relationships that shift their independent meanings to refer to the language of sympathetic magic, objects rely on contagion. However, the methodology of this particular exhibition requires there to be an active fragmentation before elements can be reconciled. Here, I have

chosen to engage a further analogy – that of the exploded book. Unlike Western science, which is predicated on evidentiary systems, and uses analogy as a form of persuasion, I am suggesting that art relies on an explosion of established systems. Through this necessary disordering of accepted structures, it limits the known values that can be brought to the reading and experience of the work, and this disorientation generates an active engagement. 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, *Subtle Thresholds* set out to test the ways in which an act of curation is able to simultaneously absorb and interrupt the patterns of display and reception of information. In doing so, it creates a system that dislodges those strong visual prescriptors.

The exhibition creates its own index or lexicon, and texts and images within the cabinets cross reference and provide clues to other elements. It appeals simultaneously to the sensory and the intellectual mind, and, in being both immediate and associative, is both synchronic and diachronic. By actively engaging the viewers, 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, in its texture and visual richness, presents a seductive and persuasive visuality. It is this sensorial persuasion that I see as the agency of art in the politics of knowledge.

Endnotes

1 I use this term in relation to 'network topology' that shows the layout of computer or biological networks. The structure of the network demonstrates nodes of convergence and the map of connections between physical or logical points. Most often, this structure resembles the branching of a tree.

2 Ian Hacking, amongst others, has drawn attention to the manner in which a bias for tree-like ordering can obscure alternative understandings of evolution. His lecture 'The Fatal Attraction of Trees', delivered at numerous venues, traces the persistence of the tree over time from genealogical trees, trees in religion to evolutionary tree diagrams.

3 Collections allowed comparative measurements to be made between species. This enabled false equivalents to be drawn between skull size and development in humans and was used as supporting evidence for racialist ideologies.

4 Diderot and d'Alembert's *Encyclopédie* is the subject of my *Knowledge Chambers* exhibition (2007/8). See Langerman (2008).

5 This assertion relies on contemporary literature that draws attention to the relationships that humans have with animals, for example, Donna Haraway's *Companion Species Manifesto* (2003), Derrida's discussion of his cat in *The Animal That Therefore I Am* (2008) and Donna Wendy Woodward's *The Animal Gaze: Animal Subjectivities in Southern African Narratives* (2008).

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