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HIGH FIDELITY IMAGE Tracing the emergence of a new constructed image

A thesis submitted in fulfillment of the requirements for the award of the Master of Creative Arts — Research

from

UNIVERSITY OF WOLLONGONG

by

Marius Foley

Faculty of Creative Arts 2004

THESIS CERTIFICATION

I, Marius Foley, declare that this thesis. submitted in the fulfilment of the requirements for the Award of Master of Creative Arts – Research, in the Faculty of Creative Arts, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Marius Foley

12 October 2004

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Marius Foley 2004

CONTEXT

The relationship between this Thesis and the Creative Project

This MCA-R comprises a written thesis that also provides the text employed in the creative project, which is a book design and posters. In the book the text appears in two parts: the *Main Text* — empirical research on the new constructed image, and the *Disruptive Text*— a reflexive text on the relationship between image and text.

The interplay between the interrelated texts and the images aims to draw attention to the underlying idea that the relationship between image and text is undergoing change. The book and posters are a visual and physical 'trace' of the emergence of this new, constructed image, through a series of graphic investigations and probes.

The book form is used to reflect the place where image and text traditionally meet. The posters visualise the exploration from the perspective of type as image.

Images of the creative work in this paper act as documentation of the project as it was exhibited, while the additional images are drawn from the book.

A supplementary essay is included in the appendix as background to the research.

ABSTRACT

High Fidelity Image: Tracing the emergence of a new constructed Image

In this thesis, *High Fidelity Image: Tracing the emergence of a new constructed image*, the writings of a range of image theorists are used to develop an understanding of a discernible new construction—the new constructed image—and its potential impact on visual communication. The research includes a survey of a number of instances in pre-literate and other visual cultures in which the image operated as a primary mode of communication. This survey, presented as 'probes' is used to underpin the investigation of the constructed image in contemporary visual culture.

On the basis of these ideas and investigations, the thesis proposes that a new image is emerging, which will correct the imbalance in the relationship between image and text. The new image will be a clear and precise communicative expression of an idea, using the qualities inherent in visual representation: compression of information, non-linear reading and visual language codes and image values.

INTRODUCTION

High Fidelity Image: Tracing the emergence of a new constructed image

This research project, including the thesis, book and posters, looks at the emergence of a new constructed image that may alter the relationship between reproduced images and text. It takes its lead from an idea raised by Barbara Stafford, in *Good Looking: Essays on the Virtue of Images*. Stafford argues that image was demoted during the Enlightenment: "graphics became entwined with dubious, if appealing, packaging and fairground huckstering...image was the hallmark of the charlatan equipped with the latest technology projecting deluded special effects." (45), and so: "In order for text-based theories, systems and methods to become autonomous referents, divorced from the sensory sphere above which they floated, the matter and manner of vision had to be demoted to intellectual nullity" (47).

Recently, through the development of relatively low cost, high resolution reproduction devices, the image has made a resurgence, able to express complex and specific meanings. Stafford claims that certain types of imagery are 'an untranslatable constructive form of cognition (expression)' rather than an equivalence (illustration) of cognition (Stafford, 37). In other words it is now possible to imagine a new image that will not operate as an illustration of an idea put in writing, but as its own expression, using its own unique features.

This research traces some of the images that have operated along these lines, such as the Aboriginal message stick, the pictogram and information and interface graphics. Each of these was intentionally constructed to convey a message. As images they offer something that text cannot: compression of information or message, and access through a number of non-linear entry points. In *Mapping: An Illustrated Guide to Navigational Systems,* William Owens comments: 'The graphic language of maps lends itself to the representation of the whole of a thing and its parts in a single view, within which we can oscillate rapidly between different levels of detail''.

The new information-rich culture in which we live leads Kress and van Leeuwen to ask: "Could it be that information is now so vast, so complex, that, perhaps, it has to be handled visually, because the verbal is no longer adequate?" (32).

The creative design work exhibited here sites the design investigation within the book form. As a designer keenly interested it type and book design, I choose to explore the new image in a space that I know well. It is appropriate as well because this is where the relationship between image and text plays out in numerous ways—image as illustration to text, as well as text as caption. Roland Barthes puts the latter thus: 'In every society various techniques are developed to fix the floating chain of signifieds [images] in such a way to counter the terror of uncertain signs; the linguistic message is one of these techniques' (Barthes, 39, qtd Kress and van Leeuwen, 16).

The book form, far from being under threat from new forms of media, is energised by the same technological developments in digital media that have produced the other forms. So it is also interesting to look again at the book form from this vantage point.

The book has an inherent 'interaction value' that draws on its tactile and sensual nature as an object, as well as the way in which we read it. This is expressed subtly by Italo Calvino in *If on a Winter's Night a Traveller*, where he exhorts the reader to:

stretch your legs, put your feet on a cushion, or two cushions...make sure the page isn't in a shadow, clotting the black letters on a grey background, uniform as a pack of mice, but be careful that the light cast on it is not too strong, doesn't glare on the cruel white of the paper, gnawing at the shadow of the letters as in a southern noonday (10).

The prototype for a book, as proposed in his paper, is intended to make the point that the object-*ness* of the book form is important to how the message is received.

The two texts within this book comprise the research conducted for this investigation of the image—the 'main' text, to read in conventional 'book' sequence, from page to page—as well as a line of text, the 'disruptive' text, that works as a reflection on the book and this

book in particular. This disruptive text invades the images, is disrespectful to the page layout, and demands to be read in a non-book way: as a line that stretches from the start to the end. This leads the viewer to see the book not just as a series of pages but as sequence and motion, the 'cinematic pace' as Stephen Heller remarks of the magazine designs of Alexey Brodovitch (American *Harper's Bazaar*). The 'default' typeface, Courier, is used to further emphasise that this text is out of place here, a layer over the main argument. Courier is also the typeface that designers dread when, after processing an image file the print reads: Error: Postscript. Source: Overrun.

The images here are not intended to depict the new image in how it might look. They merely operate as traces and indexes towards the new image. It may be that the new image already largely exists and only needs to be identified and have its codes established; or it is possible that it is still developing and may appear in a form that is not expected. This work engages with the possibility and the desirability that one will come about and that when it does that communication will be enhanced, and that we will have multi-modal means of conveying ideas, using highly develop text as well as highly developed images. At that point the high fidelity image will be established, one that has 'the ability of an electronic system, as amplifier or transmitter, etc. to reproduce accurately in its output the desired characteristics of its input' (fidelity: *Macquarie Dictionary, 2001*).

Please see print copy for the 'Plates' section.

Due to size constraints, the 'Plates' section is unable to be included in the electronic copy.

PART ONE

High Fidelity Image: the emergence of a new constructed image

The main text — text for the prototype book "High Fidelity Image" begun in the coursework component (see Appendix: "The Articulate Image").

Breaking with medieval conventions, Renaissance painters and architects designed new images using vanishing point perspective. Their purpose was to rework visual representation, including methods of seeing and reading the image. The image was legitimised in the new cultural environment of the Renaissance, where the structure of things emerged from beneath their surfaces: the grid of a building or the composition of a painting, for example. Vanishing point perspective broke down the image into a series of rules that established the clear grammar and language of the new image built on the science of perspective. The immediate effect of this change was to challenge entrenched rules governing the production of religious images, contrasting the symbolic yet often highly emotive language of the icon or religious spectacle with the humanist idea of transparency and conscious conceptual procedure in image making.

However, intellectual perceptions of the new image were not without suspicion, as it could easily be counterfeited or manipulated as a *trompe l'oeil* and hence rendered unreliable: "graphics became entwined with dubious, if appealing, packaging and fairground huckstering ... image was the hallmark of the charlatan equipped with the latest technology projecting deluded special effects" (Stafford, 45).

By the time of the Enlightenment, imagery was considered too subjective and malleable to be of significant use to the rationalist aims of thinkers, other than to work as illustration to the written word: "In order for text based theories, systems and methods to become autonomous referents, divorced from the sensory sphere above which they floated, the matter and manner of vision had to be demoted to intellectual nullity" (Stafford, 47).

The notion still exists that images are uncontrolled unless anchored to text. Roland Barthes, for example, claims:

Images are too polysemous, too open to a variety of meanings. To arrive at a definite meaning language must come to the rescue. Visual meaning is too indefinite, it is a floating chain of signifieds. In every society various techniques are developed to fix the floating chain of signifieds in such a way to counter the terror of uncertain signs; the linguistic message is one of these techniques (Barthes, 39, qtd Kress and van Leeuwen 16).

Stafford claims that one of the chief goals of the Enlightenment was to "crush mindless credulity (verbal and visual), with knowledge and reason" (48). It also coincided with a political objective of Protestants to:

use literacy as a weapon to fend off Catholic Idolatry ... the monstrous impurities of Jesuitical baroque art relied on superstitious speech, wanton gestures and abominable fetishes to reach the common unlettered man or woman through multisensory spectacle (48).

The image was clearly at the centre of this argument. Protestantism had virtually outlawed images in religious practice, as a response to the 'multisensory spectacle' of Catholicism. Literacy meant that the image was not only anchored by text, it was in fact manacled to it.

Stafford and others now imagine that a new constructed image is emerging, one that will free itself from its previously unequal relationship to text. This new constructed image has the specific task of communicating complex meanings, similar to the method of text, but by using the unique qualities that images possess. In other words, the task clarifies "the difference between an image used as an equivalent (illustration) and one that is an untranslatable constructive form of cognition (expression)" (Stafford, 37). The new image will be constructed to satisfy a new set of rules that will govern how it is to be read, and will be based on deep knowledge of how it works.

The new constructed image will develop out of an enhanced and evolving 'graphicy'. Graphicy is a term coined by William Baldwin, an English educator, who claimed there are four kinds of intelligence: literacy, articulacy, numeracy and graphicy. The last is an ability to make an image as well as to read one; like literacy, it operates on a number of levels concurrently, in the manner of a children's book that is sensible to adults. M. Ethan Katsh, in *Law in a Digital World, Beyond Words, Visualizing in Cyberspace*, observes:

There is a general idea that the literate individual needs the skills of both reading and writing. Indeed, the two skills are considered to be intertwined and so closely related that it is difficult today to imagine processing one skill without the other (152).

If we compare this idea—of needing to be able to both read and write—to visual reading, we begin to see the disparity. Katsh subsequently makes the point more forcefully: "We are assumed to require no training in order to see and consume the visual, whereas visual creation is assumed to require innate talents and to be almost unteachable" (153).

The contemporary culture of image-takers and image-makers is made up of many people outside of the 'image professions' (design, filmmaking, art, etc). Digital video cameras, mobile phone/cameras, design software, email emoticons and so on are in the domain of people who are aware of how to produce images based on their experience as image-consumers.

Each Sunday in Wollongong, for example, a parade of small 'performance' cars, with highly finished ducos and well-modulated sound, travel around the lighthouse concourse. At the end of the concourse a group of drivers take photos of the cars that meet the standards. Only the drivers of those cars are allowed to take their cars into the parking lot. Others, not selected, move on. The cultural ritual of the parade of cars is self-evident: achievement is rewarded. But the ritual involving the image taking is less obvious. It is done to bestow approval, but what happens to the images once they have been taken is not clear. They might be discarded, or possibly become part of a large and constantly growing collection, or reappear in any number of publications: *zines*, magazines, websites and so on. In any case, the photographing of the small performance cars is one particular example of widespread practices in image-

taking that are constantly occurring. Skateboarders also have a culture of photographing the 'moves' of members of their group. These visual records of performance are different from the conventional 'family snaps' or wedding photographs composed to act as mementos of an event (although often these images are stage-managed to include an ambient mood, or picturesque location, as scenario to the picture). The image of a performance such as skateboarding or surfing is one that is a creative collaboration between the image-taker and the actor (skateboarder or surfer). This type of image is active, in the sense used by Francis Bacon to distinguish between "active" images: "images of the present tense, that are felt immediately, as in images of human suffering", for example, and "thinking" images, that: "require more lengthy contemplation in order to be understood" (Bacon, qtd Burnett, 16).

Image-taking, such as in the examples of the car aficionados and the skateboarders, operates as instructive, performative and communicative media, working largely within the sub-cultural groups. The incremental impact of these special interest groups and their use of image-making tools is such that their presence has entered the gaze of mainstream media, as a fascination for street-level cultural activity (and its efficiency in forming potential markets).

For the image-takers and makers, the activity provides a way of understanding the media from a producer's point of view, coupled with an already general knowledge of how media are produced. The last ten or more years of "Making of…" movies that describe behind-the-scenes techniques and the way effects are created have educated the image-taker. We know how to set up a shot, the value of a selected location. We can overlay text and imagery and construct special effects using commonly available software.

This ability to know how media are produced and to be able to produce them is becoming a part of a standard (Western) childhood experience and education. A girl in Grade 5 is set a project on gold. Her response is to make a video that simulates a television game show. In her version of the game show, all the questions are about the discovery of gold in Australia, and her contestants are cut-out photos from celebrity magazines of Sarah Michelle Geller, Ashton and Eminem, stuck on card.

The video is an accurate depiction of the TV show format; the scene and staging have been designed to a plan with a particular image in mind, rather than simply assembled. She is in a culture that is at home with taking images, working with a range of media conventions such as the game show format in this instance, and making a new image that will perform in a range of media. Burnet points out that the performative aspect is normally disregarded: "The creation then display of images presupposes a context which can be described as 'performative'. We don't generally think of images as vehicles of performance, but films are shown in theatres, paintings are displayed in museums as part of a 'show' or 'exhibition', plays are 'staged', even books are often accompanied by their authors'' (Burnett, *Cultures of Vision* website). This is a far more sophisticated engagement with the image than formerly occurred and is evidence of a close reading of media models, in this case television.

This creative design project takes a look at the way the image is emerging from its subservient role as illustration into a more active partner to text, working with its own unique features, and often able to communicate at an intelligent level, independently of text. The book is a series of 'probes' designed in part as homage to Marshall McLuhan and Quentin Fiore, whose irreverent uses of type and image were significant points along the road that image has taken since the Enlightenment. As McLuhan says in *The Medium is the Massage:*

Our time is a time for crossing barriers, for erasing old categories, for probing around. When the seemingly disparate elements are imaginatively poised, put in apposition in new and unique ways, startling discoveries often result." (117)

This study and the creative project are an engagement by this designer with a change in contemporary image culture: the evolution of a new constructed image for an image- savvy audience. Publications such as *NeoMu* and *This Is a Magazine* are almost entirely visual, made up of images that have been sourced from an international culture of image-makers who work electronically and send their files to each other. Yet these images are not necessarily examples of the new image, but are evidence of widespread activity in image making. By participating in the image activity I hope to discover the clues to the new image.

It is difficult at this stage of evolution of the new image to predict how it will look. It is likely that the new image will not have one particular look at all, as a multitude of looks emerge, evolve and disappear in the constantly moving currents of use. Thus the new constructed image will remain flexible and useful, in much the same way that text can be used in any number of different contexts from personal correspondence through to academic writing. Chances are that a multitude of voices will accompany the new constructed image as it evolves out of graphicy. As it is designed to be consumed, the new image as an active image of the present, subject to all the contingent conditions of style and fashion, will speak of the moment.

This work proposes a number of images which have occurred over time, that hold a key to how the new image works, rather than how it might look. These examples will be examined graphically to draw out what it is visually that makes them relevant to the argument.

The Australian Aboriginal 'message stick' is good example of how an interactive image could develop. The stick's purpose was to convey a message in the medium of incised wood, handed from one group to another, just as in other cultures a letter or note is handed from one to another. In the case of the Aboriginal 'message stick' the transaction was accompanied by the messenger also voicing the message (Wood Conroy 2004). The image (incisions), the materials (wood), and the transaction (handing over and voice) all worked to convey the message. A new image might require a similar tactility and sensual interaction, and it can acquire a link to sound when produced electronically.

In information design, an area of increased activity since the invention of the computer, a wealth of information can be transformed into knowledge on one picture plane and provide multiple entry points for its reading. The interface, map and diagrams are members of this set of images. The interface made necessary the close study of the use of metaphor in imagery to encourage an unfamiliar public to interact with computers. The icons of the Trash Can, Bomb, Arrow Cursor, Folder and File are elegantly simple images that outline the full process of working on a computer: file inception, storage, modification, failure, and deletion of the iterations. Susan Kare, designer of these icons, had an acute understanding of this type of

symbol, the need for it to make a quick connection to the metaphor, which prompted her use of the easily identifiable look of the Trash Can. Yet at the same time the icon reflects honestly on the medium in which it appears. The original icons were designed as 'bitmaps', highlighting the limitation of the resolution on early WYSIWYG computers.

Other images, such as the pictogram, ideogram, symbols and logos, have been dealt with in more depth in books such as Michael Evamy's *World Without Words*. They are highly compressed and deductive images that work by trying to find a common symbol that represents simplicity while being applied to complexity. The pictogram of a man ascending an escalator, for example, only works if we know what it is that it aims to depict. Unless we have some experience of escalators, its meaning, at best, would be 'going up'. Naturally it is difficult to make images so universal. The factor that makes these images acceptable as a visual language is that they have had wide international exposure. They are understood because meaning has been strongly attached to them and reinforced through use.

There are many other examples of images that have established the groundwork for the new constructed image. In the mid-1920s, for instance, the Russian Constructivists set out to turn their art into a medium for communicating political messages to a largely illiterate population. They were deliberate in constructing images that meant something specific and that worked to rules established for their new visual language. Far more recently, developments in magnetic resonance imaging (MRI) can show a patient's brain and overlay it with loci of brain activity. In this case the image is rich with information that, properly read by someone trained to decode it, is more efficient and economical than text in presenting the same message. In response to the application of this type of technology, Kress and van Leeuwen ask: "Could it be that information is now so vast, so complex, that, perhaps, it has to be handled visually, because the verbal is no longer adequate?" (32).

The examples used here all have the intent of communicating something specific: the message stick might invite a meeting of groups, the map might convey spatial information as well as depict the human impact on that landscape. What they do not yet do is convey a more complex

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meaning, not necessarily in the same way that text does, but with the same intention to be precise and clear.

The grammar of the visual language that Kress and Van Leeuwen construct in their book *Reading Images, The Grammar of Visual Design* also hints at the components of the new image. The vectors that are formed within the image and which point our eye to where the image-maker determines, or the zones of the image that are conventionally 'before' and 'after', 'top' or 'bottom', for example, might be used to construct a new image that is more aware of itself, because of this knowledge.

Additionally important to the way the new image works is consideration of the interaction we have with it. Paul Virillo imagines a parallel world of 'sightless images', where computers present images to each other without any human eyes seeing them, while the new image will be one that is not only highly visible, capable of reproducing itself in many forms of media, but also tactile and sensual with a keen knowledge of human interaction. As we witness the computer 'disappear' or mutate into intelligent fabrics, polymers and light, we will see also images taking new forms. According to Jelle van den Berg in his catalogue essay Conversation #1 Pacific: "A good painter of landscape extends the atmospheric conditions, the weather has to be made believable, conditions of light tangible". So too the new imagist must make an image that can extend the atmosphere and make light tangible. Our visual sense will combine with our tactile sense to allow the image to convey its meaning.

According to Ron Burnet:

The act of engaging with images is as much a bodily function as it is a cultural one. What we define as the visible (in the form of an image or the act of seeing) never fully contains within it the range of experiences we need to maintain a genuine feeling of control (*Cultures of Vision*, 127).

In other words it is the physical way we look at the image—where we stand in relationship to a painting, or where we sit in the cinema, how we hold a book—that sets up our relationship

to that image. Our interaction with the image is also a dialogue. In fact, Burnett observes, "perhaps what we are engaged in is more related to the activities of speaking than just viewing." (Burnett, *Notes for Debate*). Graphicy, or the knowledge of how an image is made, makes the dialogue honest, so the image is less susceptible to accusations of "dubious, if appealing, packaging and fairground huckstering."

Probe #1

Aboriginal message stick

Patterns of lines, more geometric than organic, are incised into the wooden stick, which is approximately 20cm long and 2cm in diameter. The lines may represent part of the landscape, trees, rivers and so on. The message, though, might be an invitation to a funeral ceremony, or requests for supplies (Wood Conroy, 33). The sticks would be delivered by a messenger who would also voice the message. Wood Conroy observes:

Subtle variations in the organisation of lines had specific meanings in these accounts [Anthropologist Charles Mountford collected and documented the message sticks described] inferring a proto-written language in the linking of marks to an abstract idea of country and kin within a space of time (Wood Conroy, 33).

Edward Tufte, in *Envisioning Information*, describes the enhanced visual perception that operates in a visual culture (such as pre-settlement Australian Aboriginal culture) as: "micro-information, like the smaller texture in a landscape perception ... where the pace of visualization is condensed, slowed and personalized" (38).

These 'images' encapsulate a full experience of personalised communication: visual, 'written', audible and material. As Kress and van Leeuwen state:

The material of an expression is always significant, it is a separately variable semiotic feature ... each (signifying system) contributes to the meaning of the text in its own

particular way. We are interested therefore in the surfaces on which inscriptions are made (rock, paper, plastic, textile, wood); in the substances with which inscriptions are made (ink, gold, paint, light); and in the tools used for making inscriptions (chisel, pen, brush, pencils) (234).

Message sticks operated in a society that had no other written language, and whose members were separated by distance. Yet the codes were sufficient to convey a message to another language group. The fact that they were physically handed to the other group was important to how they were received. The transaction, or handing over, similar to receiving a letter, added a physical aspect to the image, as did the tactile nature of the material. This is a less obvious experience in contemporary electronic communications: emails, faxes and such. Interestingly, however, the personal transaction is now taken up in 'ambient' marketing. This type of marketing adds personal contact and creates situations that provoke a personal response, often obtrusively, as an element in a marketing campaign. In 2002 a colleague was walking in the Sydney business district. He noticed a woman handing out cards, essentially images, advertising a "men's lounge". He observed that she was deliberate in whom she selected and to whom she handed the card. Selection added to the illusion of its being a personal invitation, and possibly less easy to avoid, or indeed reducing guilt by having the decision made rather than making it.

The message stick, too, had this embedded sense of a deliberate and structured communication. Perhaps the new image will depend on more than just being visual. It might need to be tactile and/or audible, for example; it may need built-in experiences of transaction or interaction.

All these extended experiences or qualities can be embedded in electronic or digital images, especially in the case of computer-generated simulation. Haptic technology allows the image to seem to respond. A contemporary message stick, for example, could be set to give a range of responses, heavy to light, depending on the message it is intended to convey. It could also carry sound, other images, and have a changeable texture. The mobile phone is an example of how this type of technology develops. Initially it was entirely speech-based. Now it takes

images, sends them, receives text messages and operates as a visual medium as much as a speech medium. Howard Rheingold, in *Smart mobs: the next social revolution*, describes a 'media moment' where he was looking at a group of young people on mobile phones in Shibuya, Tokyo. Rather than have the mobile phones at their ears to listen and talk, the group was looking at the phone screens. The transformation from audio to audio-visual will continue to change as the technology develops.

Probe #2

Information and interface design

The value of information design to the development of the new constructed image lies in its ability to compress information and make it available on one picture plane with multiple entry points. Interface, maps, medical imaging and diagrams all work on the principle of providing layers of information that can be read in a number of different ways. In *Mapping: An Illustrated Guide to Navigational Systems,* William Owens writes: "the graphic language of maps lends itself to the representation of the whole of a thing and its parts in a single view, within which we can oscillate rapidly between different levels of detail".

This demonstrates a significant difference between image and text. Text, while lean in the number of recognisable components (letters or type) needed to assemble it, normally requires more space than image does. MRI, for example, shows the brain structure in a single image with several areas of activity shown as areas of colour, depicting different levels of intensity, the degree of activity, how it is stimulated and where it may be malfunctioning. A text description of these elements, their relationship to each other, and how that relationship might affect the whole brain, would require either shorthand, itself a visual system, or a number of text pages.

Edward Tufte, compares the "posterisation of information, reducing complexity to the point where it loses gradation or shape" (50) with "layering and separation, two methods of

constructing images, which allows the image-maker to find strategies that reveal detail and complexity—visually stratifying various aspects of data" (53). The first refers to something like a symbol, which restricts its meaning to an a simple image. The second is the map, the interface of information design that uses layers and separation to construct a visualisation of the information. This is enhanced in the electronic environment by the potential to move between layers and into separated areas, to delve to greater depth. A fine example of this is John Maeda's conceptual interface design, Atmosphere. It appears as a 'cloud' of information accessible to three levels: macro, medium and micro. Atmosphere tracks a research project. At the macro level we see a cloud with little definition, but which subtly shows how the work is divided into smaller components; at the medium level we find more detail; and at the micro level we are taken to final conclusions, documents and notes. "The interface presents not only the discrete information but also an organic ensemble view [image] of the intensity of each project and the workload impact delivered across time." (MOMA online catalogue essay). The work is accessed by a series of handheld computers, set to interrogate the various levels. Moving in and out of the levels also builds a multi-dimensional picture of the relationships among all the information, of parts of the information, across the levels, like flying through the clouds.

Although it is more possible to move in and around the layered electronic image than the static image, it is still a feature of printed maps and information graphics that they provide multiple layers of information and non-linear ways to access it. They manage complexity within an image by compressing and abstracting information. The contemporary London Transport Map, for example, was made possible because the designer, Henry C. Beck, a draftsman, made:

two radical innovations ... they were a) the enlargement of the central area in relation to the outlying areas, so that the complicated connections of the centre could be more easily shown; and b) limiting the direction of route lines to verticals, horizontals and 45° diagonals (Tufte).

In the 1930s this was revolutionary approach, and the distortion of distance allowed the map to represent the systematic rather than the space or time aspects of travel. It used the metaphor of an electrical diagram to make apparent to the viewer what it was representing and what was left out or abstracted.

The interface as an interactive and electronic image uses metaphor in much the same way as the map does. In the case of the computer interface the metaphor of the office was adopted: desktop, folders, files, trash cans, clocks and so on. It gave a visual structure to the screen, providing, as the map does, multiple entry points to the information or activity. So a file icon accesses the information within a document; the hard drive icon accesses the many layers of documents, software, communications and so on. Interface design is now responding to a whole raft of new applications and screen sizes: mobile phones and PDAs (personal digital assistants), GPS (global positioning systems) location devices and touch screens, as well as intelligent textiles, for example.

Each requires a new image to describe it.

Conclusion

Current constructed imagery, drawing on some unique features of past images, as well as the new imagery of electronic media, is reaching a stage where it is possible to imagine that there can emerge "an untranslatable constructive form of cognition (expression)" (Stafford, 37). This image may be capable of expressing a complex and intentional meaning that is more sophisticated than that allowed by its current role, regaining its position alongside written text. It would not illustrate text. Rather, it would work in parallel with it. It would embody a return to the ease that Galileo had in using images and text, where they became interchangeable as required. As Kress and van Leeuwen state, this would provide an "over arching code whose rules and meanings provide the multi modal text convey its message, such as its visual appeal or its ability to compress information and provide multiple entry points for reading it

from the one surface". The new image, as Stafford describes it, would make possible a "reenchantment" of the discipline of image making.

The constructed image may also be expressed in new tactile and sensual media, as was the Aboriginal message stick. Its physical feel will contribute "to the meaning of the text in its own particular way" (Kress and van Leeuwen, 182). The use of interaction design principles, which requires a knowledge of how something is received, and thus of how to construct a specific reception, will give this type of image added salience. And fundamental to its development would be the concurrent development in graphicy. As more people become literate in making images as well as reading them, our knowledge of the image will increase. It will become a stronger form of communication between people who make and transact their own images.

The new constructed image may already exist, or may now be emerging out of the plethora of images that surround us. It may simply be a matter of locating it, identifying it and defining its codes.

PART TWO

The Making of High Fidelity Image

The disruptive text — reflection on research and the use of the book form in the creative project.

This book, the one you are holding or looking at, has a conscious strand of text that runs through it. This text, the one you are reading now, reflects on the book as a form and the interaction between it and its reader; it also houses a parallel text, which shares the same pages and at times intersects with this text. The other text engages a new idea, a line of thought that is moving around the world, which claims that certain types of imagery are 'an untranslatable constructive form of cognition (expression)' rather than an equivalence (illustration) of cognition (Stafford, 37).

The new, 'untranslatable' constructed image does not wholly exist yet, but there are traces of it, suggestions of how it might operate and how it might come about. Its trajectory from this point on will be fast and steep. The current demand on the image to convey complex information and make possible the visualisation of unique sets of relationships is growing at an exponential rate, especially as communication-technology-enhanced information pours out wanting to be seen and understood.

In the environment of increasing convergence in digital information devices, the high-fidelity image will essentially provide a seamless interaction between the idea and its viewer/reader, keeping its integrity from the time of conception, through realisation, reception and reading. In accordance with standard definitions, high fidelity is 'the ability of an electronic system, as amplifier or transmitter, etc. to reproduce accurately in its output the desired characteristics of its input'. In a comparable way, the aim of the untranslatable constructed image ('new image' from this point) is to match the fidelity of the 'output' to the 'input'.

To do this will require a change in the way the new image is read. The key requisite is the image-savvy audience, with its ability to take images (via digital camera and scanner), make them (via computer hardware and software) and read them (via desktop publishing output and digital interfaces), just as we are expected to do in conventional written language (Katsch, 152). The approach to reading the new image will not necessarily be the same as reading written text. Burnett argues that reverie is one condition that the reader will need to bring to reading, a sort of daydreaming where the reader is immersed in 'waves of interaction', which like the "waves on a beach come and go with different heights, different intensities, and depending on the weather, radically different sounds... humans interact with the waves in any number of ways, from gazing at them to touch and immersion" (Burnett, 204).

To explore the idea — that images are becoming enriched, understood from cultural and technical vantage points (Burnett, 204), capable of provoking interaction, and tangible — is to look at the visual traces perceived to be important to the emergence of the new image. The images made for this book trace other sources: particular images that once performed or still are performing at least part of the role of the new image. Preceding in time and culture the core concept of the new image, yet commensurate with its explanation, is the Aboriginal message stick. The message stick, as an object, is sensual and tactile; its surface-image is incised and burnt into its material-image, wood, approximately 20cm long and shaped for the hand. It is a performative image that was part of a whole transaction including voice and 'handing-over'.

The map or interface, on the other hand, is relevant because it shows the immense wealth of information that can be contained on the one picture plane and accessed from many different entry points.

The book form as the medium for exploration offers the opportunity to play with conventions. It is traditionally where image and text exist alongside each other in harmony or antagonism. The book often appears to stand apart from the technological rush that is taking place elsewhere in media. But the book is being energised by challenges from other forms of media, such as film, digital media and the Internet, and it is taking advantage of the new technical developments. This is evident in the proliferation of 'picture books' (once a derogatory term), made up of images, designs and illustrations that are compiled by a large and active community of image-takers and image-makers. The new book is made possible as high quality technology becomes accessible in cost and production terms. Such books communicate almost completely in images. Most are 'pieces' that work as conventional images do, making non-specific statements, but some are more 'intelligent'; that is, they contain more conscious knowledge of what they are attempting to say and how it is best said. These books also demonstrate that there is an audience for these images. The safe estimate is that the audience for these publications is largely made up of image-makers, an indication that the number of image-makers is also on the rise.

The book form offers a considerable contribution to new technological configurations such as the computer interface. The book has always had a high 'interaction value': it appeals to senses other than just the visual, its object-*ness*, feel, aroma, audibility (at a low frequency), and shape all make it satisfying to use. If all these values are working to their optimum, the book can create a whole environment in which to read its text.

There is an inevitable merger between the printed book and its electronic relations, as the book brings its salience and sensuality to the table and the new technologies offer a transformative and responsive relationship between the idea and its reader/viewer. The form itself emerged as a result of two technological developments: the application of paper making technology and the invention of movable type.

Papermaking originated in China, and via trade with Arab countries was introduced to Italy in the 12th century (Febvre and Martin, 30). It gradually gained acceptance over the two centuries leading up to the invention of movable-type printing. Despite initial resistance to its fragility and impermanence, paper took a foothold when it became critical to book publishing. Other media such as skins and parchment were hard to source in quantity and were technically incompatible. The contemporary book form was itself born out of a dramatic technological shift when Gutenberg invented movable type and a printing press that used it, coinciding with improvements in paper production. The book has responded successfully to all subsequent technological changes by quickly taking advantage of technical developments, drawing them into its form, or changing form when necessary. Its 500-year history is a record of the interplay between shifts in production methods and the way ideas are communicated through the medium. The flexible format offered by the book over such a long period is an excellent model for this investigation of the new, constructed or high fidelity image. The book form, with its many shifts in layout, and our reception and response to them constitute a significant part of our cultural legacy.

The book is also, ironically, the form that presumably did most to demote the symbolic and iconic centrality of the image and relegate it to the role of illustration.

This book operates on several levels. It is an investigation of new images — ones that may be capable of communicating complex and specific meanings — and it is a reflection on the book and this designer's interest in the book form, typography and image-making. This book also engages with the current publishing movement, where designers are using the book, alongside electronic media, to involve themselves in a dialogue about ways of communicating in response to the changing relationship between words and images. This shift toward a balance between the importance of the image as much as the text is not a movement that seeks a return to a romantic past of the book as artefact. Yet it is one that sees the book as an evolving form energised by challenges from other forms of media, such as film, digital media and the Internet. There is an intertextual connection between the content — the shift in the text/image relationship, and the book form. In this study the book has been deliberately chosen as the site of investigation, as it is the place where (in contemporary typography and layout) image and text share, overlap in and compete for the same space. Hopefully, the change outlined in this project will be visually obvious within these pages. There is a neat irony in using text to explain a challenge to its hegemony.

Form and function have undergone a similar transformation over recent decades, and function is no longer seen as the main determinant of form. The impact of new materials has allowed function to be performed in many forms and media, all designed to include other considerations such as human/object interaction, visual and tactile appeal. The relationship between image and text has until recently been one where text has often been considered dominant and image is merely an illustration of that text. With the multitude of media currently available and the explosion in image reproduction in print, photography and digital media, some images are themselves undergoing a change in purpose as well as appearance. This change is in turn realigning the text/image relationship to one that is likely to be more equitable, where image will be used independently for its communicative qualities.

This book responds to new insights developing in the field of interaction design that move away from a close focus on investigating and designing people's interaction with technology, the original purpose of interaction design, to include a broader range of interactions, both physical and virtual. The book has a high inherent interaction value that allows it to withstand incursions on its turf by other media. These new conditions (the increase in the use of image to communicate ideas and the broadcast appearance in interaction design) suit the book form. It is still ahead of other media in image reproduction, and it has an enviable tactility not shared by the digital display. The look, feel and even smell of the book work in its favour.

Despite the book's many favorable qualities, however, the design for this book and its visual investigation of the new image is precarious. It must develop the idea of the emergence of the new image and show its visual sources — such as pre-literate communication artefacts, symbology, information graphics and the interface — while at the same time not imposing an actual "look" on the new image.

The book, whose early form was adapted perfectly to disseminating the rationalist aims of the Enlightenment, and which benefited from centuries of dominance as the medium used to distribute ideas, was a highly developed form. It allowed a number of texts — words and image texts — to sit comfortably on its planes, the pages. It encouraged a relationship to develop between these texts: sometimes a deliberately antagonistic relationship and on other occasions reflective. At the same time the book form can allow one of the texts,

such as this one you are reading, to take a self-reflexive role, examining itself, the book as text, thereby satisfying the original rationalist desire for detachment to give authority to its argument.

This ability to layer texts is something that happens differently in electronic media. The navigation bar on a website, for example, establishes the idea of multiple choice of direction through the document and can demonstrate an imposed order of prominence on the information or ideas. It is constantly there on the screen to 'turn the page'.

In electronic media we also see 'through' layers to the one below. This transparency is better achieved in digital media through software programs such as Adobe PhotoShop and Illustrator, because some layers can be turned off, moved or minimised, to reveal the others.

The printed book doesn't have these advantages, yet it can manage different information and concepts on the page, in much the same way as an image does when it compresses information to fit onto one plane (such as a painting, a map, or a diagram).

This *intertextual* text must be considered in the design. The way it appears on the page will determine whether it can stand aside and comment on the book and its forethought and production with authority, or if it fails, merging too closely with the 'observed' texts and thus losing its detachment.

The conventional way of extracting a meaning from another medium is by referencing it, often visually. For example, a visual reference to the Web and its non-linear, hyper-linked presentation of text is the previously mentioned navigation bar, which implies an ability to move around the text [Website] with ease. A navigation bar on a printed page, however, despite its visual interest, is useless, and its loss of use highlights a different rather than a shared meaning. Similarly, page numbers on a website would be useless, as they do not aid in locating where you are in relationship to the idea you are following. And while a page is an interesting metaphor to carry across to electronic media [see *This is a Magazine*, www. thisisamagazine.com] it is not necessary to the structure of screen design, especially in time-based media such as animation and video imagery.

In comparison to the navigation bar, the placement of this text on the page is of greater communicative interest. This is informed by both print and electronic media experience. The text you are reading runs through the main, dominant or observed text as, for example, a horizon might background an animation cell. Or it could appear diagrammatically to distinguish itself from its neighbour, supported by the typeset, ink and/or signifying tone it takes in the writing, the equivalent in the written word of a visual tone in an image.

The main, dominant or observed text design must also be considered, as it too has conflicting demands. An observed text is often required to play-act a particular style.For example, a classical document with a serious tone can be signified by the emphatic font of "Blackletter", while a challenging look that has attitude and delivers strong visual impact may appear in the "Grunge" font. But type must also take into account its relationship with the images sharing the page. Should type embody the notion that the word is indeed looking on as image reemerges and takes over the page, or should it instead present a case for a multi-modal space that can support both word and image, dynamically drawing on each for its qualities?

The latter is the predominant and important visual message conveyed in this text design. It is respectful of the image and still presents as an equivalent participant on the page, that at various times is more or less prominent. Following McLuhan's (1967) lead, this text massages the message to act as a series of probes seeking its reconsideration as more than dextrous typography.

There will be times where conflict or 'opposites' take the lead on the page. Contradictions were the basis of the course that Johannes Itten conducted in a class on Opposites at the Bauhaus (Droste, 26). It showed how notions of contradiction and opposites aid design: the simple juxtaposition of things with opposite features highlights similar and dissimilar elements in each. A black square and a white square together share a geometric shape, but are the inverse of each other in colour. So too, an image and a text block on a page can share a similar space, but appear to be the inverse of each other in their visual intention. Images articulate through depiction, while text articulates through description. The images

in this book are meant to depict a development in images, from early visual languages such as the hieroglyph through to the precursor of the new image.

At other times a more reflexive space will be developed. In this case white space acts as the buffer between text and image. Overall, this study pays tribute to the 'cinematic pacing' that Alexey Brodovitch achieved in his publication work (Heller, 135). It also acknowledges the unique mastery of type within the book form displayed by people such as John Cage, Quentin Fiore, Marshall McLuhan, David Carson, Wolfgang Weingart, and others.

The approach to this task shares Wolfgang Weingart's revelation that "After many years, I have become aware that my best ideas were inspired by procedure" (118). In short, this book is a reflection on the procedural aspects of design, forethought, the use of placement to develop insight, prototyping, production and reflective analysis. Weingart, the mid 20th century German typographer and experimental designer, used a mixture of observation, especially of unintentional outcomes, and self-set exercises to develop his work. He observed broad links between stone pathways and the impression of the bottom of a slug of lead type. This ability to see connections between disparate things is one of the skills needed by the new imagist. Weingart's approach makes it clear that it is possible to make sense of both type and image in this instance. New arrangements, such as this, will be what make new images possible, by drawing on existing meanings and using them together. It may be more important than designing a new visual language, as the soviet Constructivists attempted in propaganda, art and advertising in the decade following the Russian Revolution. An aspect of contemporary visual culture is our knowledge of how it works, its grammar, and how it is received. This will be the basis of constructing images that communicate complex messages.

Procedure works best when built on a structure, preferably a structure that can stretch to take in new insights and is flexible enough to move fluidly between ideas. There is a structure to this book that is designed to do this. The grid is constructed to allow a flow between the various texts on the page, letting the type or image fall to the background where necessary, then reassert itself as the play between word and image is enacted. The reader/viewer will be seeing and assessing simultaneously whether this has in fact been achieved in this book. To satisfy the book's role as an assessable item for a creative design, it will be the quality of seeing and assessing simultaneously that must work hardest.

As an appeal to the senses, which is the objective of contemporary interaction design, this book relies on its tactility: weight, size, and feel, to make its assertion that these things are necessary for full communication. This reasserts that the mind is body-centred, and responds to physical as well as emotional and intellectual stimuli.

The personal interest that informed the making of this book was the desire to explore and extend further than previously attempted the form of a printed book, to see what comes of a different approach to book making. Indeed, have new ways to using the book been exposed, or is it now necessary to accompany it with an electronic form? Are there ways of enhancing the interaction value of the book, or has it reached its optimum? These are open questions, assuming no particular desire to reach a conclusion one way or the other. The book is simply an engagement with new developments in constructing communicative images, under the influence of interaction design. It is a self-conscious exercise, a way of adding to understandings of one's design approach and output. The challenge set by this project is a 'wicked problem', a problem "that in the process of being solved, generates a new way of looking at it" (Buchanan, 10) from which come, in a multiplying effect, discovery and insight.

For the book to succeed on the level of reflective, personal expression, it has to fulfil the designer's desire to find a new way of working in contemporary conditions, a way that produces for the designer a new design result.

Finally, this book presents an idea that, if it eventuates, will change the way most designers work in the near future. We will need to be more knowledgeable about images, how they are constructed, their grammar and codes, and to develop a new 'graphicy', the visual equivalent of 'literacy', which is being able to both read and write, in this case, to read and create images.

APPENDIX

APPENDIX

Supplementary essay (Spring 2003)

An Articulate Image

An investigation into the potential for a new, constructed image capable of communicating a specific message, independent of written text.

Our contemporary visual culture is under constant transformation, accelerated now by the increasing presence of imagery in our everyday visual environment. This is bought about, in part, because of the emerging media that provides an ease of reproduction not previously possible; and, in part, because of new needs in communication. The globalisation of communication requires a set of languages—written and visual—to transcend the numerous national languages. This is not a new *Esperanto*, the idealist hope of L.L. Zamenhof, which aimed at a common spoken language; but, rather a dynamic, evolving visual language that is being produced internationally by people working in a range of new and old media.

My research looks at the impact of this transformation on the relationship between image and text in visual communication. I will investigate this change from the point of view of the image, and speculate on the potential for a new type of image, one that may develop to fit the task of contemporary global and local communication.

As a graphic designer, I am interested in the potential for a new constructed image that is a self-contained visual expression acting independently of written text. The distinguishing feature of this image will be its ability to communicate more complex meanings and with more precision than current visual languages. In this essay I argue that the conditions now exist for this image to develop out of present image-making coupled with our knowledge of how images work. And that this new image re-aligns its relationship with text. It may, in fact, become as refined as written language in some circumstances, and more appropriate to communicate an idea in others.

I will explore how this image might be constructed or designed and how it might act. How it looks is irrelevant to this study, because, as a language it is required to perform under a range of conditions and should not be constrained by a style.

Barbara Stafford, in *Good Looking, Essays on the Virtue of Images*, claims that the image held a central role in communication and record-keeping in pre-literate societies, that it was consciously demoted during the Enlightenment, and that it is now reasserting itself and regaining some of its original purpose.

I have chosen a number of examples which I believe plot the trajectory that Stafford describes as the history of this type of image, and which may point to the new iteration. They are the Aboriginal message stick, symbols and pictograms, constructivist propaganda and information and interface design.

The term 'image' is a broad description that encompasses a range of visual expressions produced in a variety of media. In this essay I am concerned only with the image that is created to perform a communicative, descriptive or recording function, as distinct to the expressive of decorative image. In the latter part of this investigation I will focus on the image that operates as a self-contained visual expression which communicates a relatively complex meaning or message. In other words, to look at "the difference between an image used as an equivalent (illustration) and one that is an untranslatable constructive form of cognition (expression)" (Stafford, 37)

In pre-literate societies, such as in ancient Egypt and Sumeria, image existed without written text and, in fact, prefigured the development of text and the alphabet. Text developed out of iconic symbols that visually represented the essential shape of distinguishing feature of the thing it was describing; for example wavy lines = water in the Chinese ideogram (Kress and van Leeuwen, 19). In the case of the alphabet, the image was further abstracted. Kress and van Leeuwen describe this process: "…the hieroglyphic image of the ox's head which initially 'stands for' 'ox' eventually becomes the letter aleph, alpha, a. In alphabetic writing the image

of the object represented has come, over time, to stand at first for the object, then for the abbreviation of the name of the object and eventually for its initial letter" (19).

A number of cultures, such as the Australian Aboriginal, either predated or stood outside of these developments. In these cases it fell to the image rather than text to record and to communicate messages. A case in point is the Aboriginal message stick. This is a three dimensional object, a stick, carved or painted with a set of patterns. The purpose of the design on the stick, known as pattern writing, was to convey a fairly simple but specific message. One group would send a message stick to another, via a 'mailman' or messenger, informing the later of their intention to visit or pass through its territory. It may have included details such as the number of visitors and an appointed time and place to meet (Wood-Conroy, discussion).

The code used on the message stick needed to be read by different language groups. There is nothing innate in pattern writing that would translate to all groups. Like all codes, the correct reading of the stick develops over time, through use, and by mutually accepted conventions. "The successful functioning of art in its cultural context depends on the ability of other members of the community to decode its meaning at one or more levels...Visual clues are therefore deliberately encoded in both style and iconography to convey messages according to local conventions" (Leyton, 58). E.H. Gombrich addresses conventions an his article on Western pictorial representation, "Image and Code". In it he says: "What must be learned is a table of equivalence, some of which strike us as so obvious that they are hardly felt to be conventions, while others are chosen 'ad hoc' and must be memorised piecemeal for the occasion" (Gombrich, 17). It would appear that conventions played a large part in Aboriginal imagery, and that these conventions on the whole were 'obvious'. That is, that different cultural groups would have developed similar conventions, based on the same conditions – the environment, as well as the social nature and place of ceremony in Aboriginal culture, for example. Peter Sutton, in Dreaming, The Art of Aboriginal Australia, makes the point that "the key locus of the Aboriginal aesthetic is the ceremony. This is essentially a social aesthetic..." (29). This shared cultural basis helps explain how the message stick could be used to convey its message across language groups.

It is not clear whether the visual appeal of the message stick played a part in the meaning of the message. Stafford makes the point, referring to pre-literate cultures in general, that: "what has been insufficiently emphasized to date is the fact that this past oral culture was also fundamentally visual" (47). Visual cultures have a fine appreciation of the subtleties in an image, in the same way that a verbal culture might rely on an inflection or a literate culture might use emphasis in the text to make a subtle point. Edward Tufte, in *Envisioning Information*, describes the enhanced visual perception that operates in a visual culture, as "micro-information, like the smaller texture in a landscape perception…where the pace of visualization is condensed, slowed and personalized" (38). Gombrich adds to this the notion that enhanced perception is important to survival: "Our survival in the environment often depends on the recognition of meaningful features…hence we are programmed to scan the world for object we must seek of avoid" (17). From this I think we can assume that the message stick had a visual density which consisted of the pattern writing codes as well as a sense of visual nuance.

I believe also that the physicality of this 'image' is important to how the message was received. The message stick is an object that is physically handed to the receiver in the form of a non-threatening offering. This, like all media, has an effect on the information contained in it. In literate societies paper can work in a similar way as a transaction or offering, as well as the information contained in it. A 'letter' is a common form of transaction. Kress and van Leeuwen state:

The material of an expression is always significant, it is a separately variable semiotic feature ... each (signifying system) contributes to the meaning of the text in its own particular way. We are interested therefore in the surfaces on which inscriptions are made (rock, paper, plastic, textile, wood); in the substances with which inscriptions are made (ink, gold, paint, light); and in the tools used for making inscriptions (chisel, pen, brush, pencils) (234).

The mediium, that is the wood of the message stick, is tactile and robust. It is also familiar and readily available.

It is interesting to consider here the impact of a medium on an image. A case in point is the change that paper made to the perception of images when it came into popular use in Western cultures. Paper was introduced to Italy in the 12th century. Papermaking originated in China and arrived in Italy via trade with Arab countries (Febvre and Martin, 30). It gradually gained acceptance over the two centuries leading up to the invention of movable-type printing. Despite resistance to its fragility and impermanence it took a foothold when it became critical to printing. Other media such as skins and parchment were hard to source in quantity and were technically incompatible. While still tactile and pleasing to the touch paper minimised the 'object-ness' of previous media such as the message stick, rock carvings or stone tablets to name a few. Paper changed the sense of permanence of the image, which, in turn, altered the way image was perceived.

The second example that is pertinent to this research is of the use of the image in semi-literate societies, in this case in Russia during the Bolshevik revolution, where the image was used as a propaganda tool. Bold and intentional images were used in posters, pamphlets, banners, textiles and installations, to make political 'calls-to-arms' and to visualise the political messages. These were often accompanied by text, but the overall effect was that of an image. El Lissiztky's *Beat the Whites with the Red Wedge*, 1919, is an image from this period, done in a modern, essentialist style, using geometric shapes and a simple colour scheme to communicate the revolutionary message. "The revolution is represented by a red triangle, an active dynamic force, wedging itself into the inert, self-contained 'organic' society of White Russia (Kress and van Leeuwen, 53).

The squares, circles and triangles were all component parts that contained their own 'meanings'. The circle is seen as organic, both in the sense of the all encompassing; as well as inert and self-contained, as used above in the description of the Red Wedge. The square and triangle are mechanical, representing activity and dynamic force. When composed together the relationship between these constructs the larger meaning of the image.

This example is important to this investigation because it demonstrates a serious attempt to create a new visual language:

...images became more stylised, more abstract and more obviously coded: the new visual language was explicitly compared with language, with hieroglyphic writing, with the stylised marks of Kabuki theatre...visual language was also transparent: colours and shapes were thought to have a direct, unmediated, 'psychological' impact, a non-semiotic capacity for stirring the emotions of the 'masses' (Kress and van Leeuwen, 27).

The visual language of constructivism was designed to transcend language and literacy barriers. An artistic, poetic and political imperative drove the making of constructivist images. It was clearly intended by the image-makers, although they were artists and poets themselves, that these images were to be positioned in visual design rather than fine art. This attitude coincided with their political motives, but more importantly it allowed them to develop a more systematic approach to constructing the images they used to satisfy the demand for propaganda communication. This work may provide a key to how to make the new, constructed image. Like pattern writing, the lines, shapes and colours were visually simple. The constructivist images relied on a high level of immediate appeal – they contained a dramatic effect that was heightened by the immediacy of the production process and the media that were used. It was intentional that the message and its image were integrated into one thing by an image-maker who was committed to the message as well as to the style of image, an admirable but unsustainable condition for image-making.

Unfortunately this experiment did not last long enough for the visual language to develop past this stage. Stalin "reasserted control over meaning by promoting naturalist, bourgeois art" (Kress and van Leeuwen, 27). Even if it had survived, the constructivist approach may have been too constrained by its relationship to propaganda, and too wedded to a particular (constructivist) style. Languages require more than one way of conveying a message: it might be formal, such as the language used by law, or casual, like spoken text. The 'look' of constructivist imagery has the features of a casual immediacy, similar to spoken text. It would

be hard to imagine it being appropriate to convey a formal meaning or message. However it does provide evidence that there is potential for a constructed image, and that the image may be made of a set of component parts that act as codes.

Ideograms and pictograms act in a similar way to propaganda images, reducing simple language messages, such as instructions, locations, directions and so on, to equally simple visuals. Symbols such as the ideogram or pictogram—simple figures in situations, or with props: dress, directional arrows, escalators, airplanes and so on—use a similar method to the message stick to first establish a code-set and then to reinforce it through constant use. These images however do not hold up to close analysis for a high level of visual intelligence. The male figure is depicted without need for clothes, while the female figure relies on a dress shape for identification; the only active actor is a male who travels up or down an escalator, carries a suitcase or approaches a desk. But through the global exposure that these symbols have had, these inconsistencies seem to become transparent. The image in this case then becomes an equivalent of a simple text, or message.

The pictogram was a response to the early-stage globalism of the 1960s when air travel meant that many people were arriving in destinations where they did not speak the language. The idea behind the pictogram was to provide a visual rather than text translation of the name of a place or service, by reducing a number of messages down to a shape or shapes. The human-figure shape was important as a way of personalising the information. It also worked in an abstract way, by creating a shape that was recognisable from a distance, or in competition with other visual information. Type also has this function in that the variety of letter shapes in a word help to visually recognise the word, without the need to literally read it.

More complex and with more value to this research is the group of images that are labelled under the term 'information and interface design', which are my third example. These images include maps, plans, diagrams, charts, signage and electronic interfaces. Of most interest in this group is the image that holds and conveys complex data. By visualising it the image converts raw data into information which becomes accessible to a larger group of 'readers'. Edward Tufte, in *Envisioning Information*, compares the "posterisation of information, reducing complexity to the point where it loses gradation or shape" (50) with "layering and separation, two methods of constructing images, which allows the image-maker to find strategies that reveal detail and complexity – visually stratifying various aspects of data" (53).

In the first instance, the posterised information would produce an image such as a pictogram. One feature of the pictogram is its deliberate lack of graduation. All images are black and white to make an unequivocal statement. In the second, the image holds complex or detailed information and, in turn, its form has more complexity, created by layering. Statistical maps are an example of the layering and separation technique. The base is a drawing of the spatial relationship between the identified elements—rivers, mountains, oceans, area boundaries and so on. Above that are layers of colours. In the map shown the colours represent various concentrations of population in and around Tokyo. A close reading reveals the lines of population density along train lines and arterial roads and coastal locations. The ground layer contains an abstraction of the physical landscape, the colour layer is an abstract of a human dimension, the number and concentration of people in certain areas. They work together because we are prepared to see them as interrelated. The visualisation makes sense of the data by making use of our acceptance of the integration of these two distinct elements.

Information images are interesting here because they do something that text cannot that is, they compress information without loss of detail. Kress and van Leeuwen ask "Could it be that information is now so vast, so complex, that, perhaps, it has to be handled visually, because the verbal is no longer adequate?" (32). Image has a number of advantages here: it is non-linear and allows a number of entry points into the information; and can display a number of sub-sets of information on the one plane (as in the population map and distribution of sun-spots).

Interface design also uses layering and separation to create images that we can activate to various levels. Metaphors of common experiences are used to induce us to act on these images. Interfaces like the Macintosh 'desktop' are active images that employ icons—trash can, folders, application icons—to create the whole, layered image. We are able to access different

levels of the electronic workspace by entering through the small component images such as the icons on the desktop.

In a conceptual interface design, John Maeda and others from MediaLab MIT designed an interface called Atmosphere. It appears as a fine 'cloud' of information able to be accessed on three levels: macro, medium and micro. "Atmosphere" tracks a research project. On the macro level we see how the work is divided into smaller components; on the medium level we find more detail; and on the micro level we are taken to final conclusions, documents and notes. "The interface presents not only the discrete information but also an organic ensemble view [image] of the intensity of each project and the workload impact delivered across time." (MOMA online catalogue essay; www.moma.org).

Electronic images like "Atmosphere" introduce two new elements to this consideration of the constructed image: time and interaction. Time-based images such as film are not part of this investigation. And while time is now becoming a feature of the multimedia graphic image — where it is used to unfold an idea visually and allow the viewer to move through the layers of the image—it is specific to electronic images. This research is concerned with both static and electronic image, so I will not look any closer at time as a factor in constructing the new image.

The other element, interaction, does, however, affect both static and motion image, and is, I believe, an essential part of this investigation. "Interaction focuses on the interactivity between an experience and its audience" (Shedoff, 134). With this definition in mind we can now position the image within the interactivity between experience and its audience. I believe this will be a significant feature of the new image because interactivity implies a direct communication – the aim of the new, constructed image.

An example of a use of the 'interactivity between the experience and the audience' is given by the following description of an ambient marketing exercise, experienced by Dr. Jon Cockburn. Ambient marketing is a new category given to unusual and often personally-targeted marketing strategies. Cockburn describes being in the financial district in Sydney, noticing a woman handing out cards (images) to men she selected from the largely male crowd. He

was chosen and offered a card. The 'experience' in this case was being 'chosen' (personalised communication) and offered the image (an invitation). The message was conveyed by the image (a woman, posed), as well as the person to person interaction. Text was used to name and locate the venue.

Interaction studies focus on how interactions happen between people and people, and between people and things. Such study grew out of the need to convert the electronic space (computer) into a useable technology. Initial studies were directed at the human to computer interface (HCI). But contemporary interaction studies are more concerned with being off the computer than on it. The intention is to subsume the presence of the computer, to make it secondary to the primary objective of transparent communication and interaction between people.

Interaction studies are helpful to this investigation of a new image because they entail knowledge of how people communicate. In other words they allow us to consider the new image as an interface – not a lifeless computer interface but one that shares some similar properties, such as layers of meaning; what Gombrich refers to as the 'ease of reading'. Stafford describes this as "thick, dense, real" imagery.

Each of the examples that I have presented—the message stick, pictogram, information image, (map and interface)—depicts images that are capable of holding and relaying information. What is yet to be considered is the potential for the constructed image that Stafford envisages, which can directly communicate a complex message without text.

But before discussing this aspect further I would like to return to the point in history where, Stafford claims, the image was deliberately and consciously demoted from its role as a significant partner to text to a role of merely acting as an illustration to it (text). At that time the development and sophistication of the communicative image stalled, while the development of words and language accelerated. She states that during the Enlightenment the written word became privileged for a number of reasons: suspicion of the image, political conflict between Protestant and Catholic ideologies, and the perception that the written word was more precise. The image, in Western culture, became suspect because it could be easily counterfeited and manipulated, it was a *trompe l'oeil*, and, hence, unreliable: "graphics became entwined with dubious, if appealing, packaging and fairground huckstering...image was the hallmark of the charlatan equipped with the latest technology projecting deluded special effects." (Stafford, 45). Bauldrillard also deals with the suspicion of the image and particularly the reproduced image, if from a different angle:

Counterfeit and reproduction imply always an anguish, a disquieting foreignness, the uneasiness before a photograph, considered like a witch's trick – and more generally before any technical apparatus of reproduction, is related by Benjamin as the uneasiness before the mirror-image (53).

The image was considered too subjective and malleable to be of significant use in the scientific aims of Enlightenment thinkers, other than as illustration to the written word: "In order for text-based theories, systems and methods to become autonomous referents, divorced from the sensory sphere above which they floated, the matter and manner of vision had to be demoted to intellectual nullity" (Stafford, 47). The Renaissance had bought some objectivity to the image with the invention of single point perspective and a systematic method to achieve it, but this was insufficient to counter the mistrust that had developed.

Kress and van Leeuwen in *Reading Images, The Grammar of Visual Design,* claim that Roland Barthes in *Rhetoric of the Image* supports the idea that image is dependent on text: "images are too polysemous, too open to a variety of meanings. To arrive at a definite meaning language must come to the rescue. Visual meaning is too indefinite, it is a floating chain of signifieds. "In every society various techniques are developed to fix the floating chain of signifieds in such a way to counter the terror of uncertain signs; the linguistic message is one of these techniques" (Barthes, 39, qtd Kress and van Leeuwen, 16).

Stafford claims it was one of the chief goals of the Enlightenment to "crush mindless credulity (verbal and visual), with knowledge and reason" (48). It also coincided with a political objective of Protestants to "use literacy as a weapon to fend off Catholic idolatry...the

monstrous impurities of Jesuitical baroque art relied on superstitious speech, wanton gestures and abominable fetishes to reach the common unlettered man or woman through multisensory spectacle" (48). Image was clearly at the centre of this argument. Protestantism had virtually outlawed images in their religious practice as a response to the 'multisensory spectacle' of Catholicism. Literacy offered another way of stripping back the use of image.

Finally, the Enlightenment privileged written text as the best means to promote knowledge and reason. In writing about the appeal of written text (print) to *Law, in Beyond Words: Visualizing in Cyberspace,* M. Ethan Katsch puts this particular view of text thus: "it inevitably works as a distancing medium...(text) requires us to look at experience that has been abstracted into words. It allows us to conceptualise something, to reason abstractly about something, to approach an issue with some degree of detachment" (163).

So, if we accept Stafford's argument, image was demoted to a secondary role (which it has held until recently) as an illustration of the written text. If it does occur that an image is visually dominant on a page, for example, text will anchor it as a caption, expressing in words what the image is not allowed or able to express itself (see Barthes, above).

The effect of the demotion was to accelerate the development of text in relation to image, at least where it is used in visual communication. Verbal and linguistic text benefited by developing an ever increasing vocabulary across a large range of disciplines such as science, philosophy, law, medicine and so on. Words became more precise, their meanings more refined and more specific to the needs of the discipline. Along with this was the growth of literacy in Western societies, bought about by the emphasis on written and verbal articulation in the mass education systems.

As we have seen from the examples given of sophisticated information design, images have also became more precise and could hold complex data. But images were stymied in communicating directly. They could 'visualise' information, but could not be used in the twoway process of communication. Stafford quotes William Baldwin, an English educator, who claims that there are four kinds of intelligence: literacy, articulacy, numeracy and graphicy. If graphicy were to rank with the other forms of intelligence it would require a similar ability to communicate directly and independently, as do the others.

Graphicy, or visual literacy, is at the core of this research. The term implies both an ability to make an image, as well as to read one. This idea of both making and consuming an image is critical to the notion of a self-contained communicative image. Katsh observes: "There is a general idea that the literate individual needs the skills of both reading and writing. Indeed, the two skills are considered to be intertwined and so closely related that it is difficult today to imagine processing one skill without the other" (152). If we compare this idea—of needing to be able to both read and write—to visual reading we begin to see the disparity. Katsh emphasises the point: "We are assumed to require no training in order to see and consume the visual, whereas visual creation is assumed to require innate talents and to be almost unteachable" (153). This is not to say that there are no levels of skill in either making or reading an image. It works in the same way that written language does where there are some people with talent for writing and others with highly developed reading abilities. It does emphasise, however, that the combined experiences of reading and writing gives value to text, and that there is no similar experience of the image.

I now turn to the structure of images, as discussed in Kress and van Leeuwen's book, *Reading Images, the Grammar of Visual Design*. The ideas raised in this book will help to speculate on how the new image might be constructed.

In this work the authors deconstruct the image to its component parts as a way of building an idea of how it works. They explore this in several ways that have relevance to this investigation. They identify where image is interchangeable with text, and the opposite, where image operates as 'an untranslatable constructive form of cognition', to use Stafford's words. They look at modality and how 'modality markers' can locate the point of highest naturalistic modality for an image; and they analyse the composition of an image, and what composition does to the meaning of the image.

There are instances where image and text do virtually the same job. They might both, for example, be able to describe a location: the word 'airport' and the pictogram of a plane are equivalent in our understanding. They both mean airport, and, furthermore, they both express it economically. There is little difference in the reading the word or the image, they are interchangeable. In other cases it is more difficult, or not possible to interchange text and image. However, they make the point as well that these are not fixed conditions. They point to new conventions, like the use of word balloons, which come from comics, but now appear in textbooks, on the computer interface and elsewhere. "In future this may well lead to the development of visual conventions for different types of 'saying'" (78).

Modality is a significant factor if image is to be trusted. As discussed earlier, a common perception of the image is that it is easily counterfeited, and also, that it is a lesser mode of communication. Kress and van Leeuwen take their definition of modality from linguistics where it "refers to the truth value or credibility of (linguistically realised) statements about the world" (160). Modality markers in a message are "established by the groups within which we interact...and have developed out of the central values, beliefs and social needs of that group" (160). Modality, the truth value or credibility of an image, is created in a similar way to how it is established in language. Kress and van Leeuwen use a 'modality scale' to locate the 'naturalistic' modality in an image, based on features such as colour saturation, colour differentiation, colour modulation, contextualisation, representation, depth, illumination and brightness. Credibility is achieved when the image is perceived to be natural according to the conventions of the viewer. They make the point that "the highest point of modality does not coincide with either extreme of the scale.: naturalistic modality increases as articulation increases, but at a certain point it reaches its highest point and thereafter decreases again" (165).

When looking at the effect of composition on the meaning of an image, Kress and van Leeuwen consider it under the following terms: information value, salience, and framing.

Information value refers to the placement of elements, which relate to each other and to the viewer, and which are endowed with values attached to various 'zones' of the image (top, bottom, left, right). Salience is where the elements are made to attract the viewer to varying degrees through a series of strategies, such as placement (foreground, background), size, contrast and sharpness. Framing is the presence or absence of framing devices (dividing lines and frame lines) which connect or disconnect elements of the image, signifying that they do or do not belong together in some sense (Kress and van Leeuwen 183).

Each of the techniques outlined by Kress and van Leeuwen, build an understanding how contemporary Western images work. Our ability to read imagery is enhanced. Alongside that is a growing use of image in simple communication—the pictogram, mobile phone icons and 'texting', to name a few—as well as complex information, as seen in the information graphics discussed earlier.

As graphicy—articulating in imagery, both reading and creating images—develops, I believe we will see the development of a new type of image. One, as Stafford describes, that is a selfcontained visual expression which will operate independently of text; made consciously, taking advantage of the ability of vision to "make an imaginative leap, embarking on a dialectical process of seeing affinities not easy to convey in words" (Stafford 208). It may be the outcome of a greater knowledge of interaction, and the place of materiality in communication.

This image, we could speculate, be capable of conveying a relatively complex statement such as, say: 'The way people perceive this argument will depend on their cultural background and range of experience'.

In this statement (an example) we have the concept of perception (perceive) and the notion of argument. A (new) visual 'expression', that is a visualisation of the concepts, based on accepted codes, would be more efficient in this case than an 'illustration'. Also in the statement is the idea of 'cultural background'. Possibly this would be best represented by a collection of cultural and physical images, using layering techniques to depict the depth of the cultural background. And 'range of experience' may be shown using something like an information graphic to present experience 'data', a visualisation of experience. This combined image would have multiple, non-linear entry points. It may also allow us to "embark on a dialectical process of seeing affinities not easy to convey in words".

It is possible to imagine this image now, but most likely it would be visually unrefined. What would distinguish it if it develops as this essay asserts, would be a visual fluency.

Once this happens it should be possible to create a rich multimodal, integrated text of image and words. Galileo, in 1613, writing about the new found planet, Saturn, demonstrates this simply (Plate 13) where the images of the newly discovered planets are a "sentence element" (Tufte, 121) which work equally with written text and produce an elegant ("ingeniously simple and effective", *Concise Oxford Dictionary*, 311) result.

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