

THE APPLICATION OF FLOW GEOMETRIES TO ART ICONS

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Fig.1. The MIRIAD logo, Hyatt, 2003

Introduction

Allow me to introduce myself. I am, firstly, an artist and, secondly, Director of an Art and Design Research Institute in the UK, the Manchester Institute for Research & Innovation in Art & Design or, for ease, MIRIAD. MIRIAD, based in the original Manchester College of Art, now a part of Manchester Metropolitan University's Faculty of Art and Design, is the North West of England's lead Higher Education centre for the study of the creative arts and for the development of the quality of cultural industries. MIRIAD has been judged, by the national Research Assessment Exercise, to be the highest-rated research quality centre for its subjects in the North West and has been awarded the highest overall quality profile for its Teaching & Learning by the national Higher Education Quality Assurance Agency. MIRIAD specialises in the research, teaching & learning, and innovative development of art, media, textiles, design, crafts, fashion & fashion business, urban design & architecture, drama, dance & performance, and creative enterprise in their practices, theories, histories, industries, cultures & technologies at an advanced level. But enough of that drum banging. Here, I want to look, as a springboard into a practice, at the logo I designed for MIRIAD. (See Fig.1)

As you can see it utilizes a clockwise and a superimposed anti-clockwise spiral motif – a bit like the old "Time Tunnel" TV series. This double spiral is a mnemonic that I use in the management of what we do in the Institute. It represents, when opened out, a three stage "Development Spiral" That can be applied to a variety of situations, as in the figure, below. On the left, research drags relatively settled

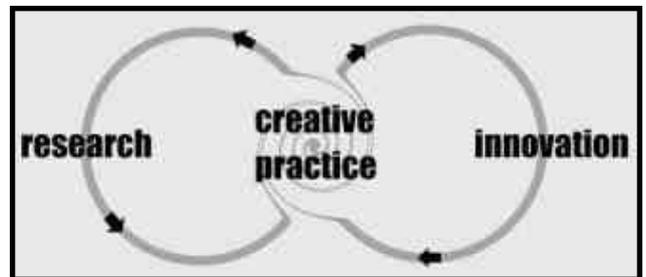


Fig.2. The Research and Development Spiral, Hyatt, 2007

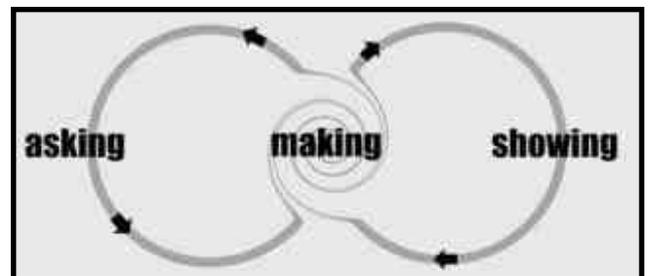


Fig.3. The Art Practice Development Spiral, Hyatt, 2007

facts in from the world (Stage 1) into a set of activities that play with and re-pattern those facts (as in a bricolage or tinkering through visual thinking) putting them through a set of transformative actions (creative practice: Stage Two) that result in innovation, originality, an addition to "knowledge" (our best guess at the time - Stage Three). The process then repeats with the new "knowledge" (our new best guess at the time) becoming a constituent part of the relatively settled facts and part of a new Stage One. The process repeats into the future. (See Fig.2)

This infinity-style shape is a very basic natural pattern for development and it can be applied to most human processes from crossing the road to being an artist. It allows one to break up a process and test its effectivity at each stage: (See Fig.3)

It is not news that this double helix occurs throughout the natural world in the Fibonacci sequence. This is well known. We can see it everywhere in nature from cauliflowers to galaxies: (See Fig.4)

In 2006, I began to paint using this Fibonacci double-helical brush mark, using watercolour paint because of its obvious water-based flow properties: (See Fig.5)

I allowed, without premeditation, the image to emerge from the abstract spirals as it "wished", that is I applied as little conscious thought as I could during the process: (See Fig.6, Fig.7, Fig.8. Fig.9)

The resulting images were surprisingly beautiful and bore an uncanny resemblance to drawings by Leonardo da Vinci, which because of copyright permissions you will have to verify yourself by looking at examples of his work on the web: (See Fig.10)

For three years prior to this work, I had been studying science and mathematics. I wanted to find out the current state of human "knowledge". Especially, I had been looking at how the brain works and at genetics. I also found the work on metaphor by George Lakoff and Mark Johnson especially interesting: the notion that all our higher thinking is built upon a consistency of some twenty-six basic metaphors (such as "Up is Good") and these are based upon the physical bodies which we possess ("Up is Good" because a healthy organism is well when upright and ill when horizontal). As Johnson said in *Moral Imagination: Implications of Cognitive Science for Ethics*, p. 10, "our conceptual system is, for the most part, structured by systematic metaphorical mappings [so] we understand more abstract and less structured domains (such as our concepts of reason, knowledge, belief) via mappings from more concrete and highly structured domains of experience (such as our bodily experience of vision, movement, eating, or manipulating objects)". This suggests that possessing different bodily forms may have resulted in the perception of a different "reality". Because of this possible variance of in perceptions of the "real", I prefer to term the composite of multiple possible "realities", "Actuality" (the arena of actions in a

theatre of intentions – this privileges the concept of the "Now" as the only "actual" time, being made up of the moment of action, influenced by our stories of the "past" and our dreams of the "future" – our perception of a narrative or meaningful sequence through events and driving action).

Brain science tells us that we do not use both hemispheres of the brain to a full capacity. The Turkish physicist, Bulent Atalay, talking of Leonardo in his *Math and the Mona Lisa*, suggests, "For artistic activity to thrive, the conjoining of both hemispheres of the brain appears to be important, or perhaps the various functions are not altogether the exclusive domain of one side or the other..." (p. 149). Devising a set of "brain/mind experiments", I attempted to awaken my full-brain capacity. I succeeded in "switching on" the other half of the brain and achieved "full brain" activity. I do not advocate this as it can be very disturbing and demands a mind that is very flexible in order to survive the process. I was attempting to change the patterning and routes of thought in order to test my perception of the "Actual". It is what artists are (that counts). I was intuitively convinced, whilst engaged in the repetitive and purposefully "mindless" ("childlike" but not "childish") activity of painting the double helix brushstroke, that this "waking up" of the "other half" of the mind was a reason for Leonardo writing backwards with his left hand. The hand/mind interaction embedded the linkage pathways of what I can only describe as the "female" half of the mind with the "male" half. It appears to make you more whole. I went back and did a re-reading and re-looking at Leonardo and his drawings of water and storms and landscapes. I became interested in his mathematics too, his neo-Platonism, and his attitude to nature, including his vegetarianism – I became Vegan in order to harmonise my body with my spirit with the natural world and I drink five-thousand year-old volcanic spring water!

Now, as I have confessed, without shame, I was operating both instinctively and scientifically. I was using both mindsets deliberately – attempting to link (as Leonardo did) Art and Science.



Fig. 4. Examples of Fibonacci Spirals in flowers, photos by Tom Hyatt, 2006



Fig. 5. The Early Stages of a Watercolour, Hyatt, 2006



Fig. 6. Vase, Watercolour, Hyatt, 2006



Fig. 7. In the manner of Leonardo, Watercolour, Hyatt, 2006



Fig.8. In the manner of Leonardo and Piero della Francesca, Watercolour, Hyatt, 2006

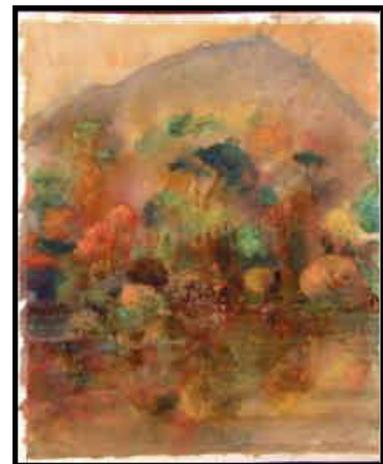


Fig.9. In the manner of Leonardo, Watercolour, Hyatt, 2006



Fig. 10. The Artist in the Work, in the manner of Leonardo, Watercolour, Hyatt, 2006

Now, there was something in the way some of those landscapes by Leonardo were drawn that did not ring true – as an artist, I would not have made the marks he made in various parts of the drawings. Putting two and two together, I hypothesized that possibly he was doing something that one cannot see immediately when viewing the work in the normal way from the front. I remembered Hans Holbein's painting with the distorted skull in the National Gallery, London. When viewed from the front, the skull in the centre of the painting is not apparent, but when viewed from the right side, the geometries reconfigure because of the perspective angle into the eyes (which are exposed brain) to reveal a perfectly painted human skull. I had a hunch that Leonardo, based on examining his mathematics, might be up to similar tricks. Atalay (above, whom I read later after meeting his niece whilst doing a presentation of this work at Yeditepee University, Turkey) documents Leonardo's use of this distortion, or "anamorphosis", "the picture is meant to be viewed from a grazing angle, from the right edge of the sheet" (p. 143). I began, from this artist's intuition, to look at Leonardo from the side in the same way that the Mona Lisa's gaze looks out at you from her canvas - like this with my right eye closed, observed in a drawing by Leonardo in his notebooks of a man (himself?) observing a landscape: (See Fig.11)

Unfortunately, I have not yet found a way to reproduce, in print, what can be seen in Leonardo's work when viewed like this because I have not managed to get a computer to reproduce it. It is a strictly ocular (bits of brain exposed to light) experience. You will have to have a go for yourself and I hope you do because it is great fun. Let your mind go blank and your focus slip fractionally. Suffice it to say, Leonardo's images are not what they seem and a landscape of rocks, rivers and geological features is transformed into a set of drawings of animals. Hillsides become dogs or lion's heads; thunderstorms can become a set of godlike heads. I decided to run with this line of inquiry as far as I could. All the time, I continued to paint. I allowed and privileged imagination over knowledge (our best guess at the time). I jumped from the edge of the known and imagined being (and therefore became to

all intents and purposes) an instinctive conduit for a natural force. It was then that I realized that artists have research methodologies that fly in the face of the standard textbooks and methodologies of research, defined primarily by a history of the relationship with the concept of the "scientific methodology". These artist's methodologies are the ways of knowing that are denigrated (often being deemed "feminine" by an overly "masculinised" epistemological environment), described by words like "Intuition" and spurred on by irrational "Love". I persisted with my double-spiral brush mark paintings, in the manner of the shape found in prehistoric rock-carving, where we see the double helix persistently described. I moved into oil painting because it offers the chance of layering veils of thin transparent glazes. I was still allowing the abstract marks to turn, of their "own volition" into a subject – that is I attempted to rise beyond a system of knowing (or a "science" as described in the poem below) to abandon what I had learned and to leap from the edge of the known voluntarily – I took a leap of faith: "I was so far inside,
so dazed and far away
my senses were released
from feelings of my own.
My mind had found a surer way:
a knowledge of unknowing,
rising beyond all science."

I Came Into the Unknown, St. John of the Cross (See Fig.12)

I researched Leonardo's Neo-Platonist philosophy. Examining that paradigm art icon, the Mona Lisa, with an imitation of Mona's gaze (Atalay's "grazing angle"), I perceived a left half that is female and a right half that is male. Crazy seeming but this is not so obscure as it fits entirely with a Neo-Platonic conception of the universe – that there is a female force and a male force in a perpetual dance through Nature, an involuting embrace. I made some performative actions on the painting using Photoshop in the hope that Leonardo was up to some of his geometric tricks. I made composites, using a "flip" function, to get an "all-female" Mona (the left side doubled and reflected to make one face of two left



Fig. 11. Hyatt looking, like Leonardo, Camera-phone snap by Tom Hyatt, 2006



Fig. 14. Spinning the "all female" Mona Lisa, Photoshop, Hyatt, 2006



Fig. 12. Fruit, Oils, Hyatt, 2006



Fig. 15. Spinning the "all female" Mona Lisa with polar inversion, Photoshop, Hyatt, 2006



Fig. 13. The Boat, Oils, Hyatt, 2006



Fig. 16. Advanced Fibonacci spinning with polar inversion of the "all female" Mona Lisa, Photoshop, Hyatt, 2006

sides); I also made an "all-male" version. Using the "twirl" function, I set the Mona Lisa spinning both clockwise and anti-clockwise, making the rotations into transparent layers and overlaying them. This spin was not arbitrary but was performed, as Leonardo might have (Atalay, p. 149) using the near-Golden Mean for spiral rotation of 1.618 or minus 1.618 (approximate due to software limitations), multiplied by Fibonacci numbers (1, 2, 3, 5, 8). Here is an early stage, showing a clockwise rotation of 1.618 performed on the all-female" version of the Mona Lisa: (See Fig.14)

I also began to use a series of transformations based on flipping the polar co-ordinates from a square to a circle and back again, literally squaring the circle. (See Fig.15)

I do not have space, here, to show you all the experiments, which I have also performed upon other art icons, such as work by Albrecht Durer. I can only say that the results are exciting and interesting. Natural forms began to appear and visualizations which were very reminiscent of visualizations that I had studied as a researcher into the physics of flow. It felt like I was operating at a quantum level, that I had dipped into the sea of infinite possibility, the quantum source at the centre of myself (I had "gone below" as they say of the adventuring heroes of numerous human cultural myths from a vast range of social formations - from the west to the east, from the contemporary to the temporally and geographically distant - and, as the hero is supposed to, I was bringing back strange treasures. I was prepared to act with a "childlike" inquisitiveness, joy and an abandonment (all-but) of aim. Like Wordsworth, I trusted that "spots of time" when one might see into "the life of things" might take one by surprise if one did not look for them. Like Blake, in his *Auguries of Innocence*, I unhooked the "top brain":

To see a world in a grain of sand
And a heaven in a wild flower,
Hold infinity in the palm of your hand
And eternity in an hour.

It was a revelation to go "inside the Mona Lisa" and strange new icons and representations of things are

to be found in there. Importantly, I feel, when one spirals into the centre, eventually the centre starts to seem to return back outward: (See Fig.16)

The resulting spun geometries have similarities to a device in sacred geometry called Metatron's Cube, which holds all the Platonic forms within it and is purported to be a key to the pattern of life itself: (See Fig.17)

Now all this may seem a little fanciful and, yes, of course it does from a traditional science perspective. Let us say, I have given art's methodologies equal insistence to science's – not one nor the other but both together in an embrace. I suggest that this is as it should be. I am now working alongside mathematicians and biologists to develop this work. I have an overwhelming conviction that the next involution in human culture will involve the respect of one set of methodologies for the other, Art with Science. These twins, these lovers, Science and Art, are, with a little conscious effort (the creation of an environment for dialogue) about to join up again, like the two sides of the brain, after some centuries of separation. First we must learn to trust and respect each other and not be afraid of stepping out of our suits of intellectual and professional armour, within which we, in truth, on both sides cower like frightened children.

I am especially pleased to be working with mathematician, Peter Rowlands (Liverpool University), as he develops his Universal Rewrite System and challenges String Theory. In Manchester, England, I am attempting to bridge Manchester Oxford Road (that divides the Science Faculty from the Arts Faculty, but has seen such giants' footsteps as Dalton, Turing, Wittgenstein, Marx, Freddie Williams – the birth of the first programmable computer – and many others in both the arts and sciences) with a trans-disciplinary structure. I have initiated the MIRIAD Project (Art Loves Science) and we have begun to consciously work across the great divide, calibrating our languages, learning to trust the other as we pursue our Manchester equation mantra on a mission to save the world (only half ironic), not $E = mc^2$ (though

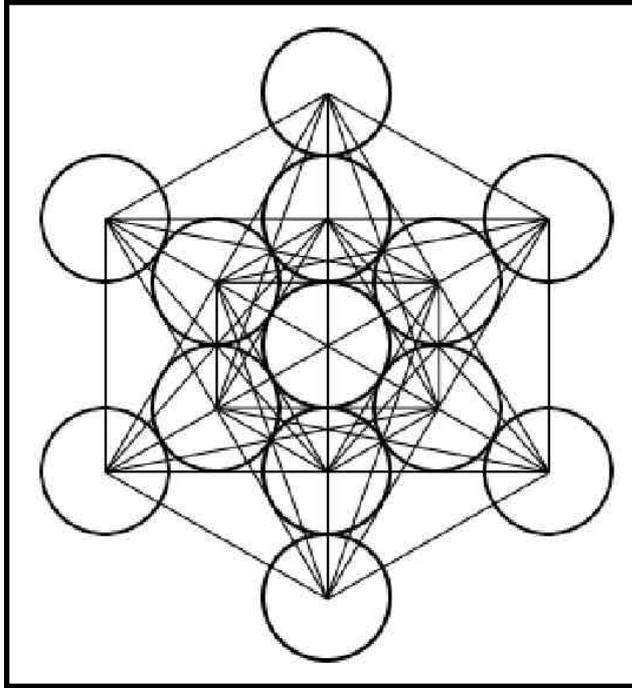


Fig. 17.

$mc^2 = E$ might be worth reconsidering) but, $K+I= U$
(Knowledge Plus Insight Equals Understanding) (1)

References

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