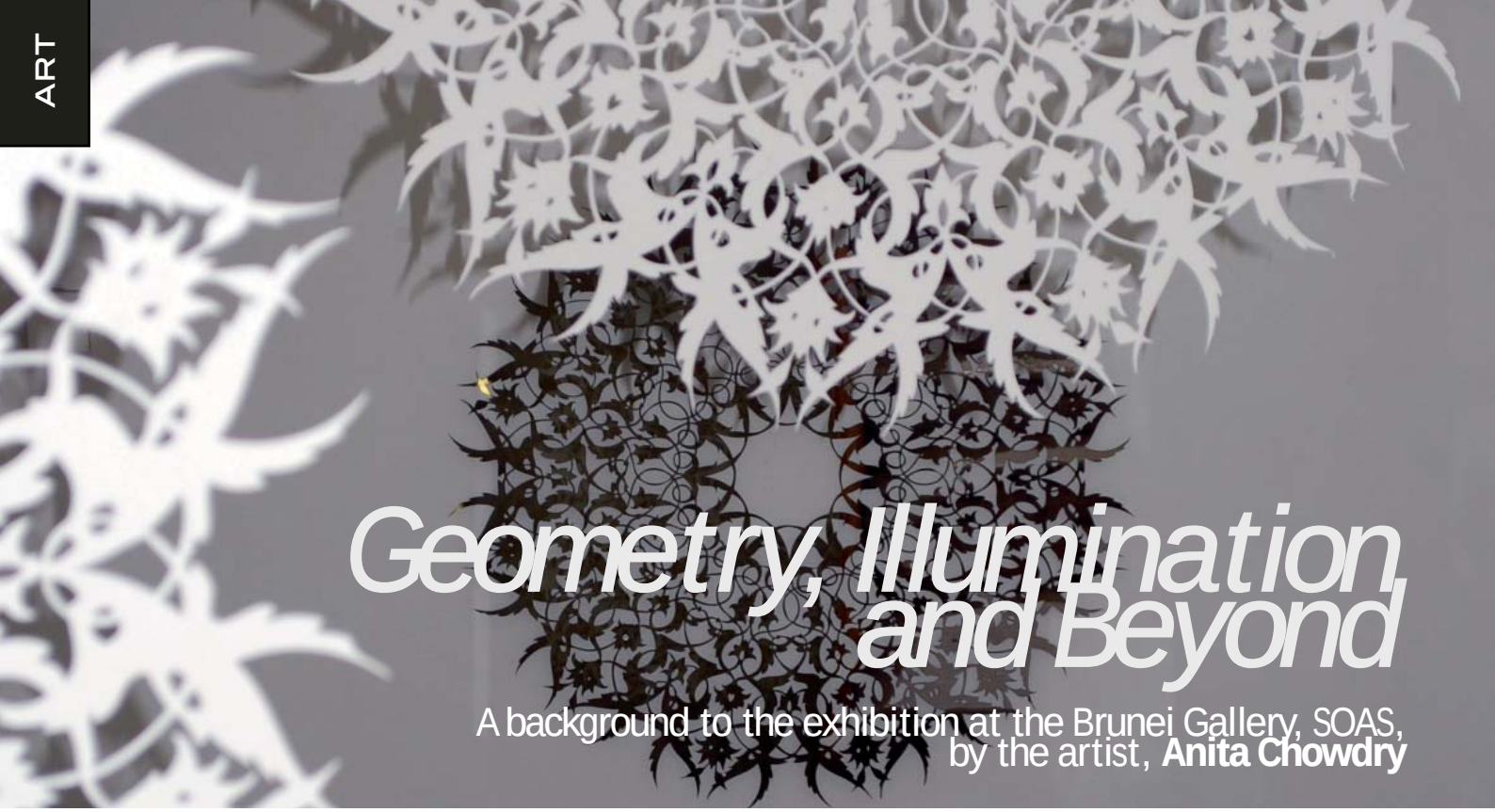


Geometry, Illumination and Beyond

A background to the exhibition at the Brunei Gallery, SOAS, by the artist, **Anita Chowdry**

Geometry, Illumination and Beyond takes its inspiration from illuminated pages in Safavid and Mughal manuscripts. The 16th century was the golden age of manuscript art in Iran, with major centres of production in Herat, Tabriz, Shiraz and Mashhad. The finest artists and craftsmen of the age flourished under the patronage of rulers for whom the possession of a royal library or *Kitabkhane* was an eloquent expression of their erudition and connoisseurship.

The working methods and stylistic innovations of artists serving the Safavid courts were imported to the workshops of the Mughal emperors in Northern India. Iranian and Indian painters worked together under the inspired patronage of Akbar and later Jahangir to develop a distinctive evolution of the art.

Today, in India, as in Iran, the tradition of 'miniature painting', which derives from manuscript art, continues. Special techniques of painting, pigment production and imagery have been handed down through generations of hereditary craftsmen, and in the last few decades the genre has seen something of a mass revival, though without the great patrons who played such an important part in the development of the book arts.

In the early 1990s I began my association with a hereditary master in Jaipur, whose forbears had served in the Rajput courts. As Mughal power declined, artists trained in the traditions of the imperial workshops gravitated towards new power bases, bringing with them their repertoire of imagery and technique. The family of my master, known as Bannu, is one that has valued its inherited body of accumulated technical expertise enough to keep it more or less intact and pass it on. The process of learning from a master is unstructured and demands patience and observation from a pupil, with as much emphasis on simply sitting quietly and watching as on taking part – in itself a valuable insight into how the artists of the past must have been trained.

Bannu's use of a time-honoured palette of colours made of natural minerals and organics was of particular interest, being very much the same as that used in 16th-century Iran and India. The recipes for their preparation that have come down to us in a few treatises are often sketchy and vague, and it is here that hereditary expertise and practical experimentation is of particular value.

By the mid 19th century, the art of manuscript illumination had been undergoing a long decline; new synthesised pigments from the West began to replace expensive mineral pigments; design and execution became mannered and less considered; and the concept had become somewhat debased from its original intention, that of 'illuminating' exquisitely hand-written texts, to that of serving merely as decoration for albums of compiled pictures.

My initial area of interest, which is the primary inspiration of *Geometry, Illumination and Beyond*, is in the working practice, aesthetic sensibility and mindset of the original 16th-century illuminators. The composition and execution of the designs in the exhibition are informed by close study of precious historical manuscripts and empirical practice based on technical observation.

The process of illumination is stupendously labour-intensive and time-consuming – and does not permit lapses of concentration

The starting point of *Geometry, Illumination and Beyond* is an illuminated shamsa or sunburst, a motif that was used on the opening pages of royal manuscripts, and a piece of pure geometry, demonstrating an underlying structure of squares growing out proportionately from the centre. I needed to follow a precise process based on my research, building up the *shamsa* using classical elements and authentic pigments, in order to gain as deep an understanding of it as possible. Real *lapis lazuli* is a difficult pigment to handle, and in the water-based gum Arabic medium of manuscript painting it is unwilling to allow anything to be painted on top of it. Fine lines of gold will sink right into it. So it is necessary to paint the delicate gold arabesques first, and then paint the *lapis lazuli* background areas around it. Pure gold pigment is notoriously sensitive to any adulteration, and exposure to any sort of dust, natural oils of the skin or unpurified water ruins its colour and sheen.

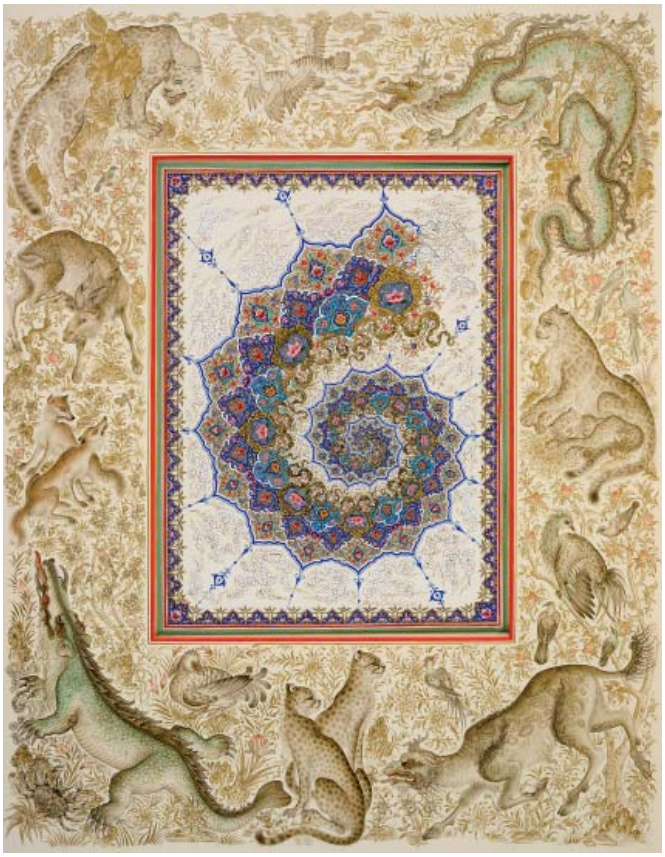
Steel shamsa installation at the Brunei Gallery (*above*)
Photo courtesy of Anita Chowdry

This makes the process of illumination stupendously labour-intensive and time-consuming, and does not permit lapses of concentration. In undertaking the project, the true nature of Islamic manuscript illumination revealed itself as a process of heightened concentration and meditation in which the ego is subjugated to the demands of the design, its structure and its execution.

Mathematics seemed the most obvious medium for further exploration of this sublime element of illumination without losing its integrity, and for some years I have been fascinated by new concepts in geometry. About a decade ago, I bought a fresh green Romanesque cauliflower. It was the first one I had ever seen, and I was intrigued by the way the florets grew in perfect spirals, which were made up of smaller spirals, which, in turn, contained even smaller spirals. I tried to draw this natural *shamsa*, and found that the apparently simple formula of its growth pattern was, in fact, quite complicated to describe, and that I would need more precise methods than my freehand drawing skills to understand and describe the structure.

Later, I understood that what I was looking at was Fractal Geometry – the geometry of nature. Cauliflowers, ferns, rock formations and clouds all demonstrate a repetition at different scales of the forms that make up their whole. For example, a rocky mountain is made up of boulders that reflect the shape of the whole mountain, each of which has smaller rocks of the same shape, and so on, down to the smallest scale. This was intuitively understood by Iranian master painters, who used this formula to paint stylised rocks and cloud formations.

The mathematics of this complex natural geometry was not properly researched until the mid 20th century, when the increasing power of computers enabled pioneering researchers to analyse and plot large volumes of data. Benoit Mandelbrot, working for IBM in the early 1960s, began to analyse the inexplicably fluctuating trends of cotton prices over the previous 60 years, and discovered a pattern over the smallest time scale that was reiterated at every time scale, right up to the overall picture. He found similar patterns in natural formations like coastlines, and coined the term 'fractal geometry' to describe these phenomena. Using a simple equation repeated millions of times to plot points describing these patterns, he discovered that they created an extraordinary shape now known as 'the Mandelbrot set'.



Among its many theoretical applications, the Mandelbrot set has been developed as an intriguing creative tool that can be used to generate an infinite variety of exquisite and complex patterns. The magical thing about this very new approach to generating forms is that it produces versions of naturalistic curves and spirals that are strongly reminiscent of classical Iranian aesthetics. Illumination lays a strong emphasis on line – its movement, subtle articulations of weight and the tensions of its curvature. These values come directly from the highly evolved aesthetic of Iranian calligraphy, which the illuminations served to emphasise. Illuminators drew upon a repertoire of stylised elements representing plant growth, cloud formations and mythical creatures.

I found in a development of the Mandelbrot set, known as the 'Julia' set, the sinuous form of the *azhdeha* or Iranian dragon undulating among Chinese-inspired clouds. The dragon prints in the exhibition demonstrate the digital medium in its pure form. There is also an expression of its dialogue with the language of illumination in a hand-painted version in which I have used traditional techniques and pigments to explore and render some of the fluid shapes generated by the Julia programme.

For me, the fractal programme becomes a cyber-enhancement of the artist's vision and an adjunct to traditional craft skills. The prevailing movement towards increased collaboration between the arts and sciences heralds a return to the Renaissance concept of the eclectic artist embracing technology and the sciences as part of creative practice.

Geometry, Illumination and Beyond is intended as a showcase to demonstrate an evolutionary journey exploring classical and contemporary form and technology through the discipline of Iranian manuscript illumination. It is intended to invite debate and collaboration, and also to serve as an educational resource for the teaching of mathematics through art in schools. Children's work created in response to the exhibition during a programme of workshops will be displayed in the gallery alongside the exhibition by mid June. To find out more about this and other related events, please e-mail gallery@soas.ac.uk.

Anita Chowdry is a painter, researcher and educator. Her exhibition Geometry Illumination and Beyond *is at the Brunei Gallery, SOAS, until June 20, 2009*

Twelve-point shamsa (*above*) Photo courtesy of Glen Ratcliffe (SOAS); **Nautilus, collection of Lionel de Rothschild** (*left*) Photos courtesy of Kevin Richards (John Jones)