

GOD IN THE NUMERAL

In 832 AD, Baghdad, the Caliph al-Mamun was joined at the Bayt al-Hikmah by Al-Khwarizmi, a mathematical genius.

As was the case with the pursuit of all knowledge, the search for God in the numeral also began with the study of arithmetic, algebra, and astronomy. Also popular, was geometry.

Al-Khwarizmi worked alongside great interpreters like Hunayn ibn Ishaq. They translated many works which were essential to a basic fundamental understanding of geometry. Greek works such as those by Pythagoras, Euclid's *Elements*, Archimedes's *The Sphere and the Circle*, *The Equilibrium of Planes*, *Floating Bodies*" and *The Measurement of the Circle* were translated from Greek into Arabic.

Today, we recognise geometry as a defining feature of art and architecture from across the Muslim world, with each region and time-period developing its own motifs, styles and patterns.

The basic shapes for geometry are circles, regular polygons, and star patterns. However, many of the patterns use several shapes and techniques, so they fit in more than one of the aforementioned categories.

Whilst geometry was also used in design before Islam, it was often only seen in borders. Scholars suggest several reasons for Islamic art to lean towards geometry in its entirety:

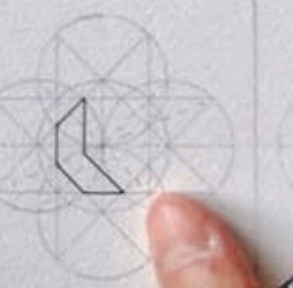
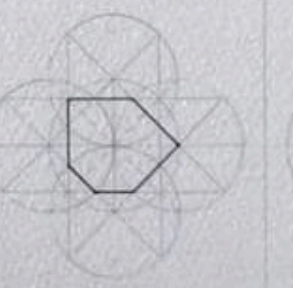
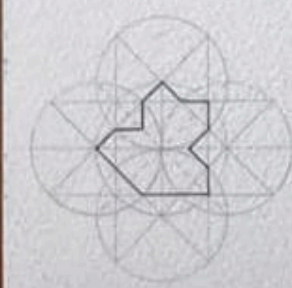
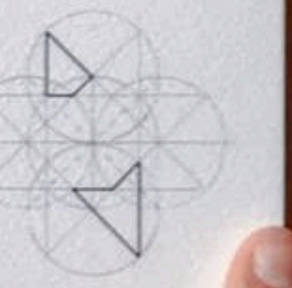
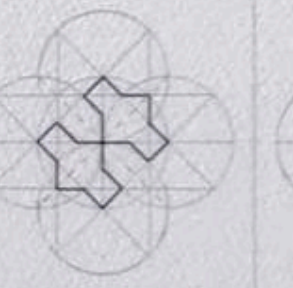
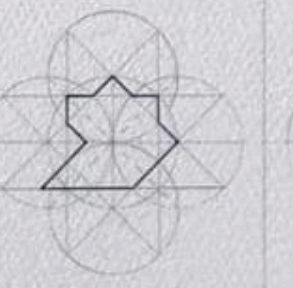
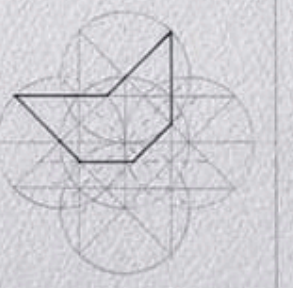
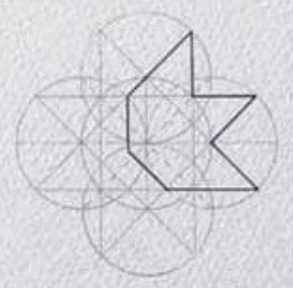
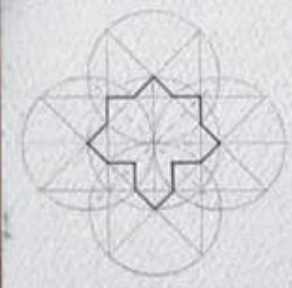
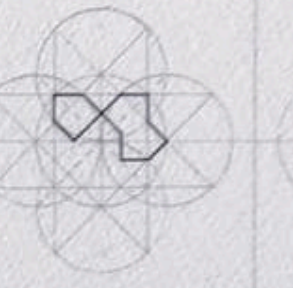
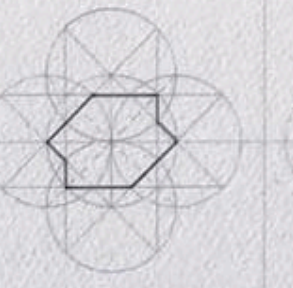
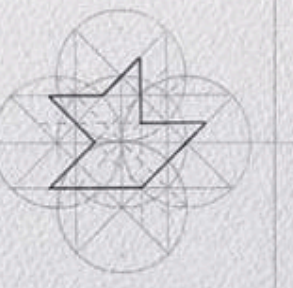
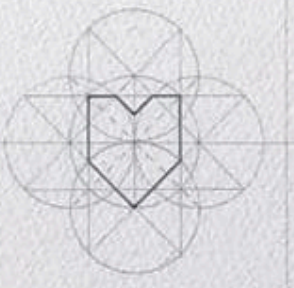
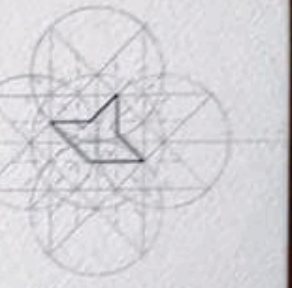
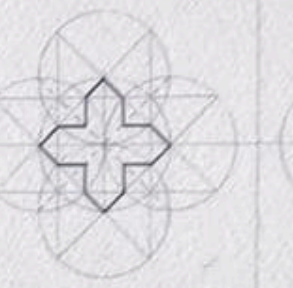
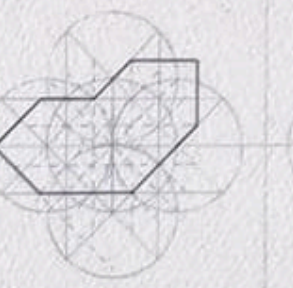
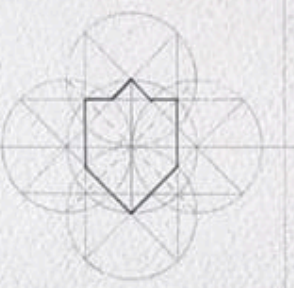
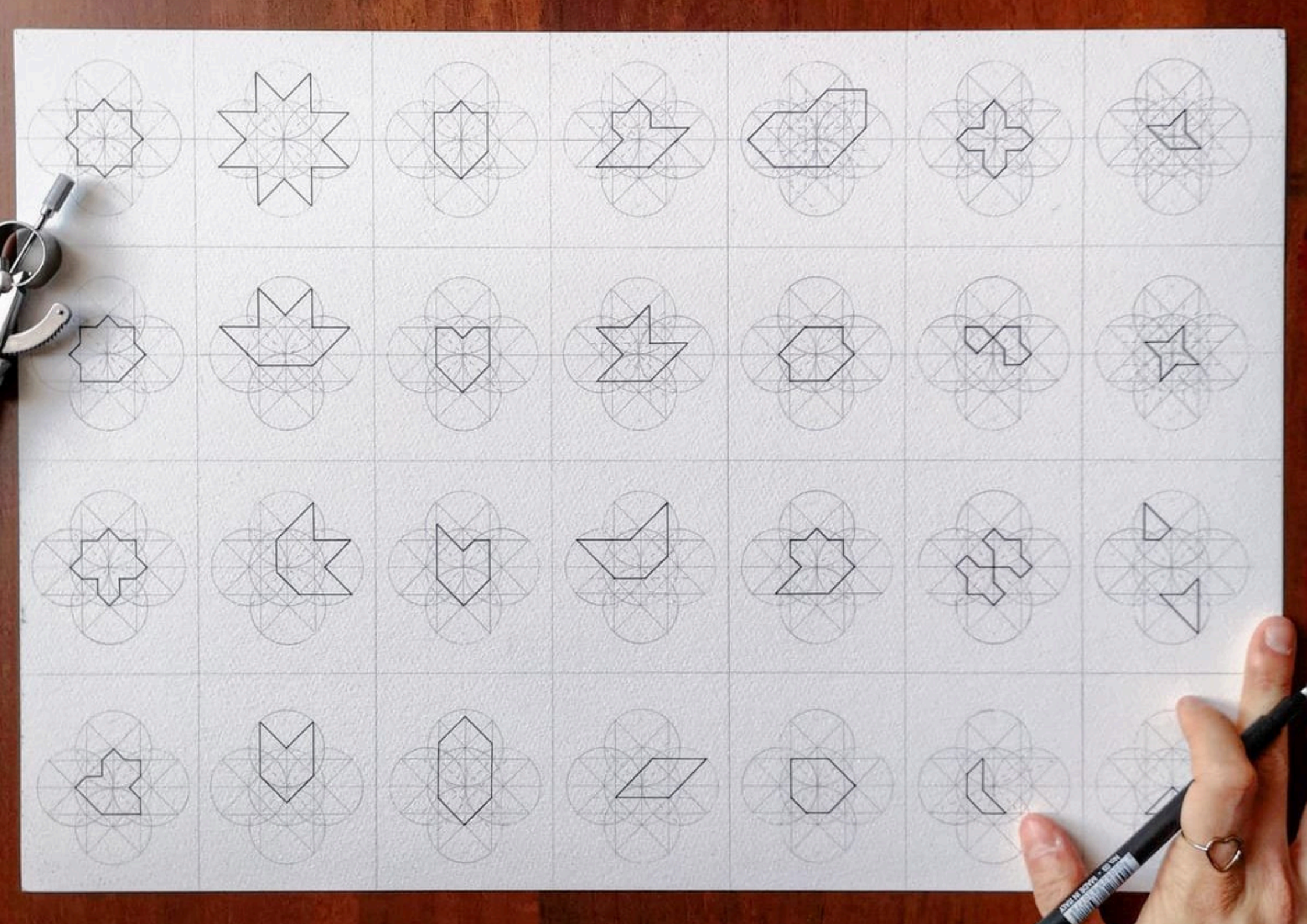
- To help visually distinguish Islamic Art from that of previous empires.
- As a response to Islam's emphasis on avoiding figural art in religious texts.
- The contributions of Muslim mathematicians and scientists aided the development of geometry as an art form.


It is also important to note that the Muslim world, like any other society, did not exist in isolation. During the early spread of Islam in the seventh and eighth centuries, artists came in contact with many new shapes and patterns, such as from the Byzantine or the Sasanian Empires.

Many of these motifs were adapted and absorbed into Islamic Art. They were then used as ornaments for two-dimensional regular tessellations in manuscripts, art and architecture.

Used in decorative repetition, sometimes coupled with florals, vegetal patterns and calligraphy, the final pieces gave an illusion of infinity, on predictable grids. The final designs exhibited a sense of symmetry, proportion, and balance.

With the illusion of infinity being seen as a reflection of the Divine and order as a basis for harmony, behind this artistic reality was a confluence of art, mathematics, philosophy, and religious thought in the Islamic world.





GOD IN THE LETTER

Calligraphy was viewed similarly, and often referred to as the “geometry of the line.” It was another practice which was simultaneously being developed at the Bayt al-Hikmah from the early 7th century onwards. Both an art and a science, it began to develop as a way to communicate the message of the Divine, especially the Quran. It was intended to be aesthetically pleasing as well as beautiful enough to be worthy of transmitting the word of Allah.

An Arabic saying goes, “Purity of writing is the purity of the soul” implying that spiritual purity was essential to play a role as important as the spread of knowledge, the pursuit of which is believed to be a form of worship of Allah.

Scribes and Calligraphy Ustad’s were some of the most respected positions at Imperial Courts. We owe much of the development of calligraphic scripts to Vizier Ibn Muqla, Ibn al-Bawwab, and Yakut of Amasya.

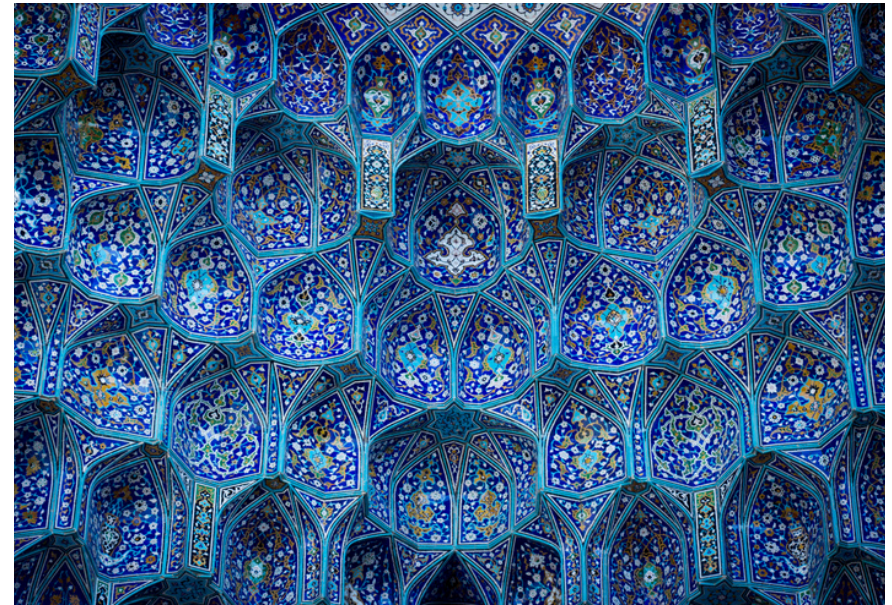
The principles of calligraphy, measurement using the dot, the alif, and the circle were put in place by Ibn Muqla. It is also these three calligraphers who set the framework for the Aklam-e-Sitte (The Six Pens): the six major calligraphic scripts which include: Thuluth, Naskh, Muhaqqaq, Reyhani, Tevki; and Rika.

The Kufic script was already in use prior to this period and was used for Quranic manuscripts as early as the 700s. Nastaliq was perfected by the Persians, in the 14th century, and is still the most popularly used script for Urdu to date. Simultaneously, the Bihari script, marked by angular letters and a decorative feel, was developed at the courts of the Delhi Sultanate and Mughal Empire, during the late 14th and 15th centuries. The Ottomans developed Divani, a script known for being ornate and flowy, which was used exclusively by the Court (hence the name, which comes from the word Divan).

Coming back to mathematics and philosophy, Al-Khwarizmi realised that the existing calculation methods would need to be revamped. At the time, three methods were used in Baghdad:

- Finger counting: for basic, everyday calculations and small business transactions.
- Counting based on the Abjad alphabet: allowed for somewhat more complex calculations.
- The Hindu method: with characters representing the numbers 0-9, and a decimal system, it was the preferred system when looking at mathematical problems.

It was the medieval Arabic-cum-Hindu numerical system which gave rise to Al-Khwarizmi's theory, that zero divided by zero is infinite, just like Al-Khaliq.



This brings up to the next subject: the zero. This can be explained in a single couplet from a Qawalli by Ustad Nusrat Fateh Ali Khan:

You are nowhere, and You are everywhere,
You are a perplexing mystery.

هو بهی نہیں اور ہر جا ہو
تم ایک گور کہ دھندا ہو

I find it rather poetic that a dot - which means nothing by itself; which when inked, is a dot of nothingness - is the foundation of not one, but two entire subjects: mathematics and calligraphy.

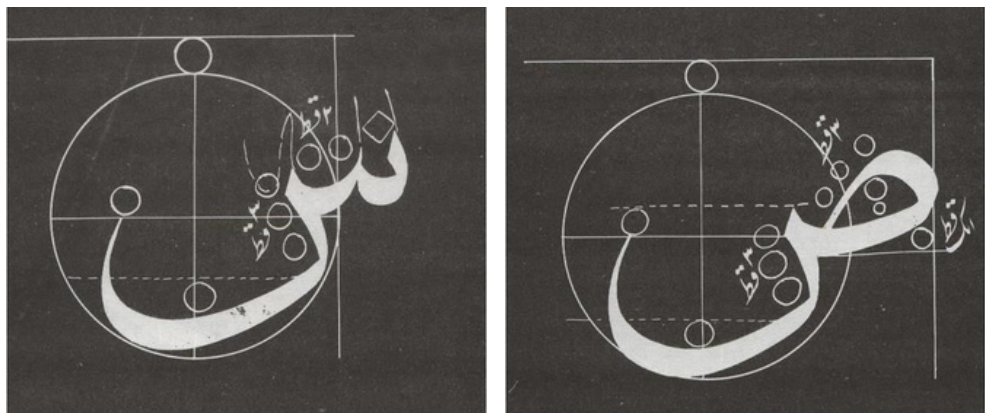
Today, this dot, or the zero, forms half the source code of the entire virtual world as we know it today. Much like the zero on paper, it also forms a black dot on the screen: the pixel, which forms the basis of all digital visuals.

Every piece of digital art, every graphic, and every photograph, at its core is a dot, which like the zero, on its own, means nothing. However, together, two dots of nothingness: the zero and the pixel allow us to create wonders, two of which this series focuses on: geometry and lettering.

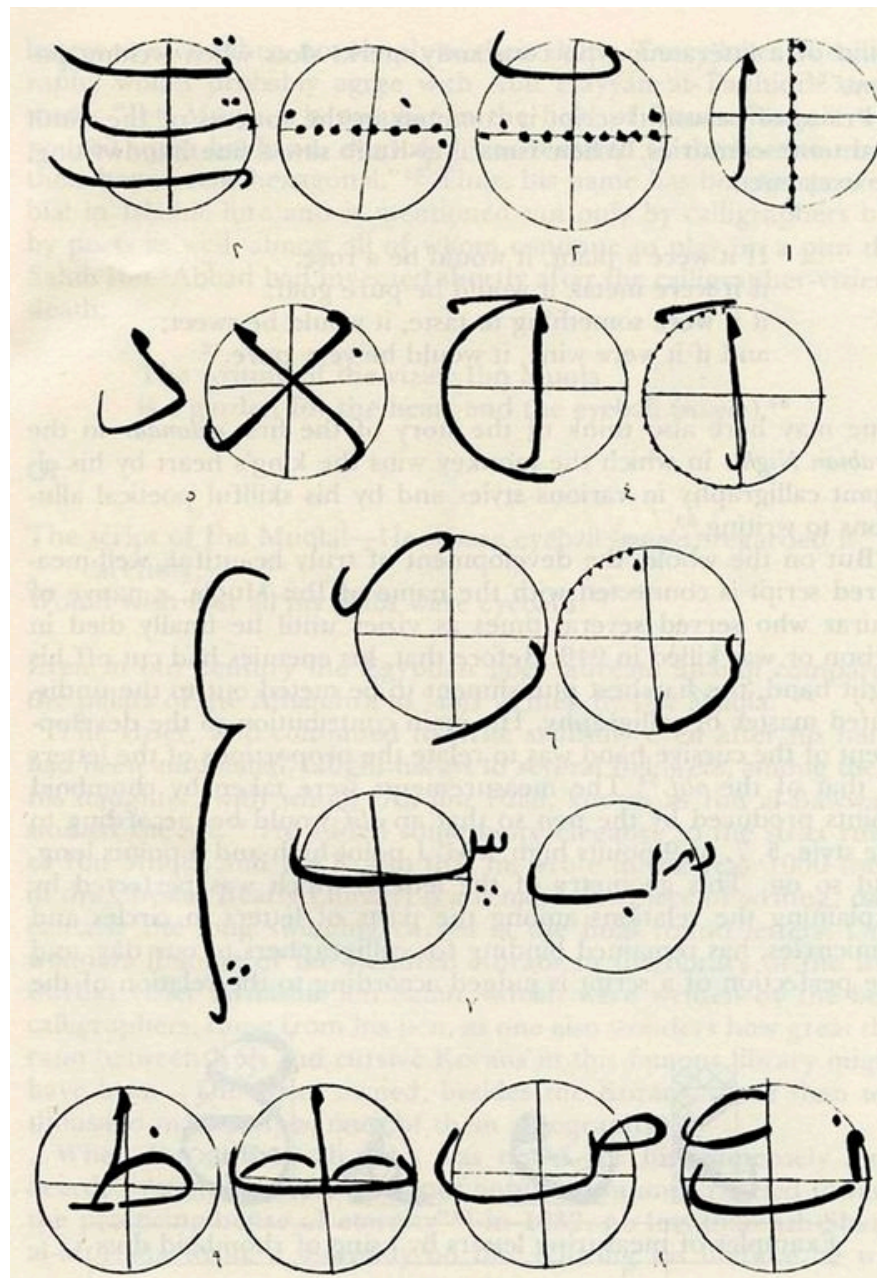
Lettering has emerged as a modern form of calligraphy. The latter is the art of writing letters, whilst the former is the art of drawing letters. Sometimes, the two overlap with one another, or with typography, a third form of calligraphy, which involves using existing letters to convey messages.

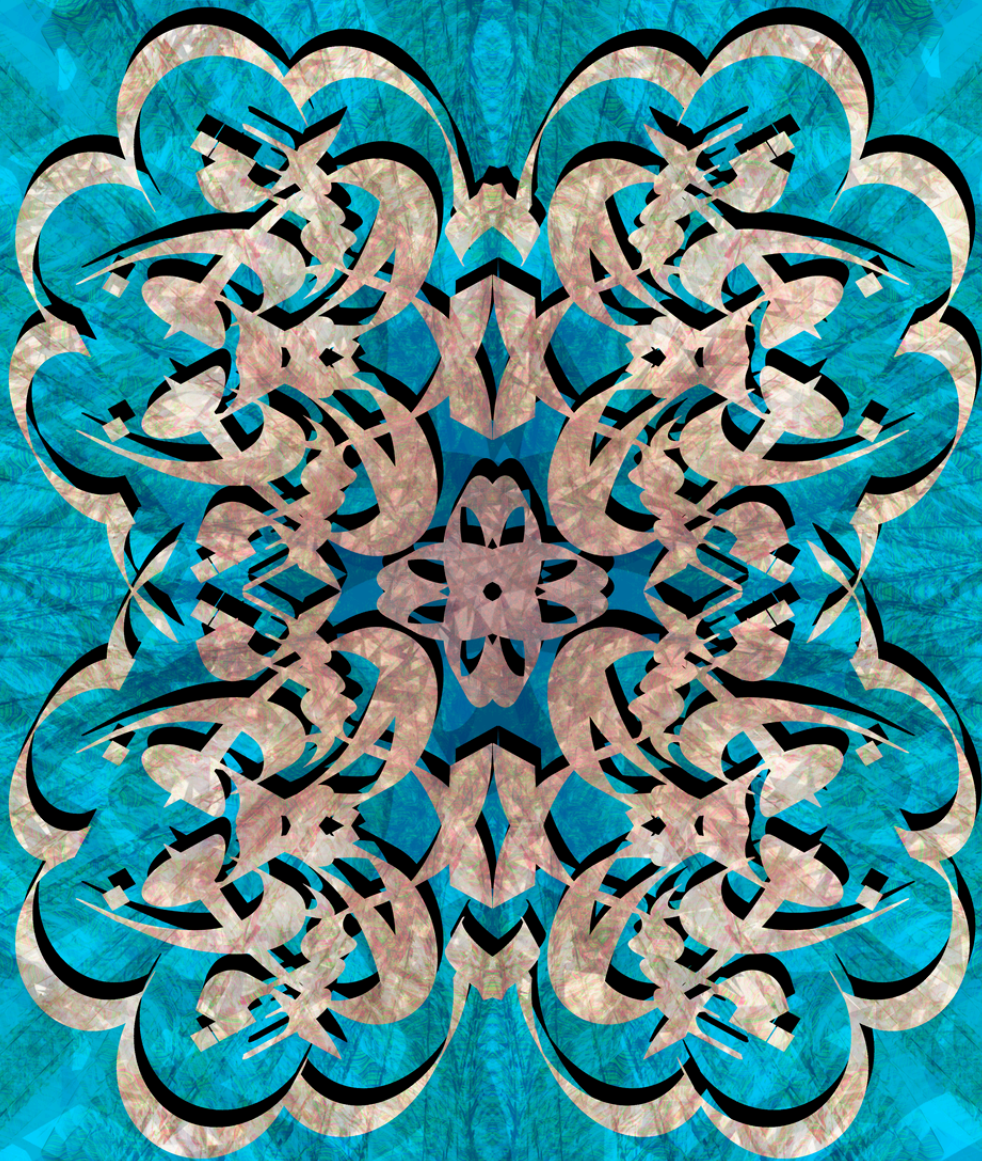
The motifs are based on five Pakistani folktales: Shireen Farhad; Momal Rano; Heer Ranjha; Yousaf Zulaikha; and Mast and Sammo. The choices are intentional. All of these folktales allude to the concepts of *Ishq-e-Haqiqi* and *Fanaa*, with *Ishq-e-Mijazi* being a pathway to the Truth.

As a digital series incorporating geometric lettering, the basis for each of these works, is the dot, the zero, and the pixel. This artistic endeavour is a small attempt to put mathematical theory, philosophical thought, and religious and spiritual belief from Islam's Golden Age into practice.



هـ ا ب د ر ن س
 ص ط ع ك
 ل م ن ي و





Farhad and his father are commissioned by the King to build his daughter, Princess Shireen, a palace. One day, Farhad finds her peeking from the *Jharoka* and loses his heart to her. She too, falls in love with him when she sets eyes on him.

When the King discovers their little tryst, he is furious. Farhad then spends thirteen years digging up a mountain, hoping for water to gush forth, so he can meet the condition set by Shireen's father, and wed her.

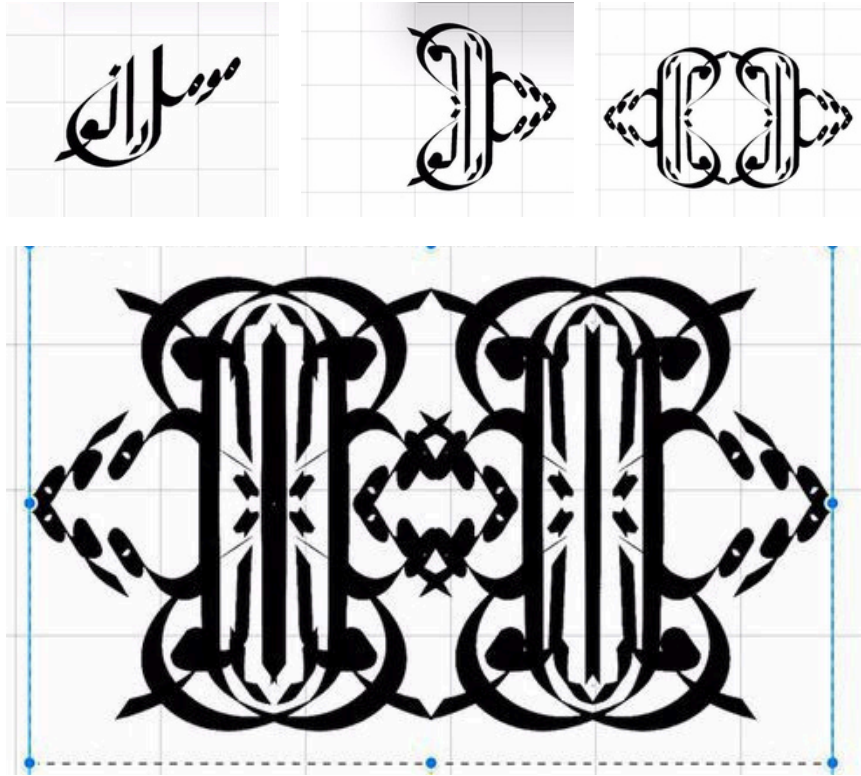
However, the King does not wish to give her away to the son of a stonemason, so he comes up with a plan - an old woman takes the false news of Shireen's passing to Farhad, who ends his life by throwing himself off the mountain.

When his body is brought to the palace, Shireen ends her life with Farhad's digging tools.

شیرین و فرهاد

A tale of Persian origin, it was absorbed into Pashto, Balochi, Hazaragi and Urdu folklore as "Shireen Farhad"

The Process:



مومل رانو

The story is a part of the Shah Jo Risalo, the magnum opus of Shah Abdul Latif, a Sufi from Sindh.





Ranjha, known for his skill with the flute, left his home following a dispute with his brothers. He travelled across Punjab, playing his flute. One day, near Jhang, it captured Heer's heart, the daughter of the Sial Chief. Soon, she convinces her father to employ him. When their romance is discovered, her family is outraged, and she is forced to wed another man.

Heartbroken, Ranjha becomes a Jogi. When he and Heer cross paths years later, she recognises him instantly, and they elope. The Maharaja initially sides with Heer's family, but a wildfire begins to engulf the city. Afraid of a Jogi's *baddua*, he has a change of heart and allows Ranjha to claim Heer.

Heer's parents, however, ask Ranjha to go back home and bring a *baraat*. His brothers welcome him with open arms. As they set off with the procession, Heer is given a poisoned *laddu* and instantly meets her death. Upon hearing the news, Ranjha dies of heartbreak.

هیر رانجھا

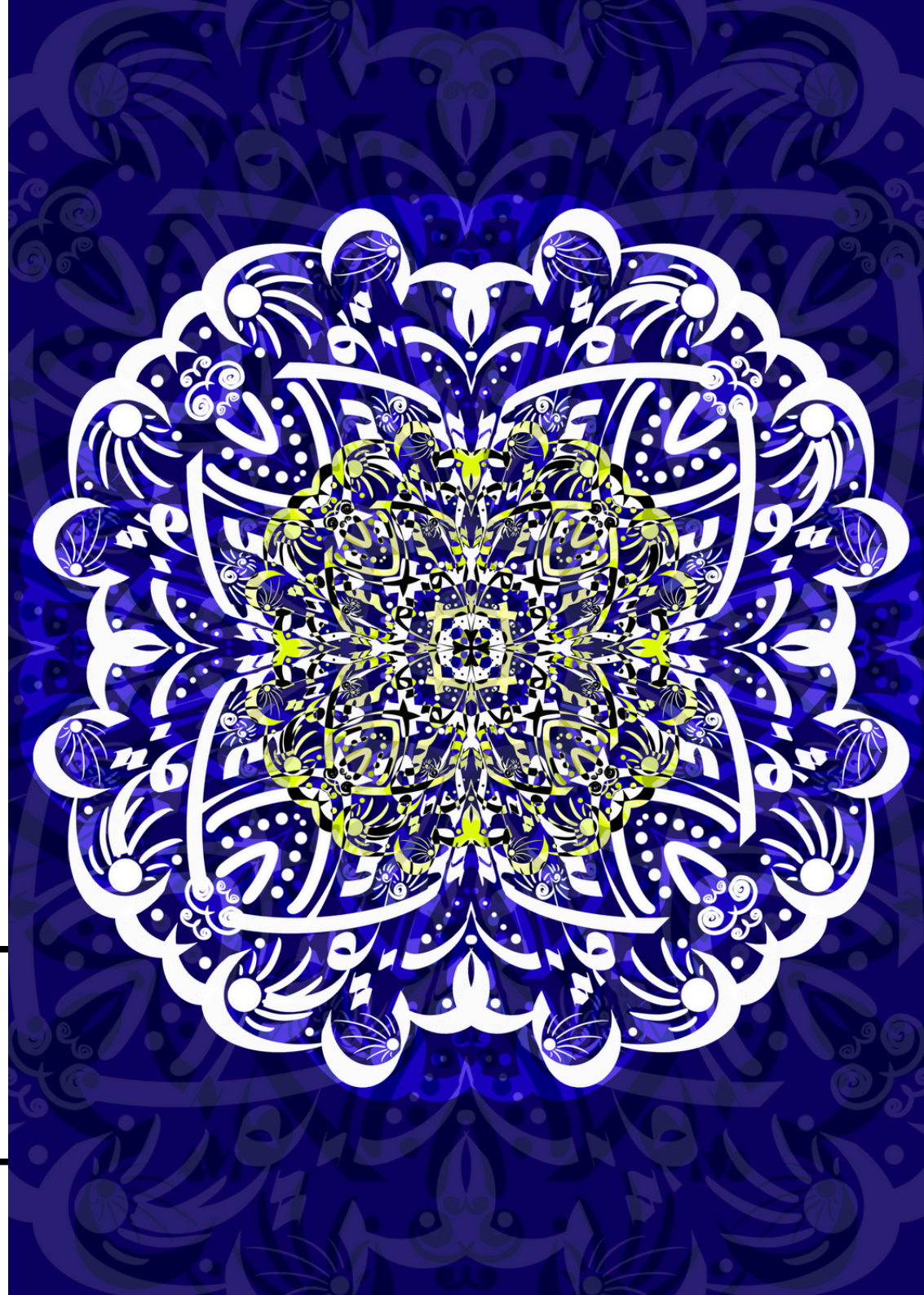
Whilst the epic has been written and re-written many times, it is Waris Shah's name which is synonymous with Heer.

The Process:



يوسف زليخا

Originally a tale from the Quran, it is also told and retold as a folktale, with Jami's version being perhaps the most popular.





Sohrab Khan, a young man, brings honour to his tribe in battle. On his journey home, he encounters a woman, Sammo, whom he falls in love with.

Sammo is already married. Soon, it becomes a tribal issue. Sohrab Khan begins to lose his sanity and is found singing in praise of Sammo in villages across the region.

Eventually, the chief of his tribe takes him under his wing and declares that Sohrab is under his protection. Despite that, there was an attempt on his life, which led Sammo's and Sohrab's tribes to war.

As the two forces face one another on the battlefield, just before the fighting begins, Sohrab appears. Both tribes then accepted him as a Saint, and he began to be known as Mast Tawakilli.

مست اور سمو

This is a Baloch folktale. Mast Tawakilli's mausoleum, in Sibi, is still frequented by devotees.

List of References:

- The MET Museum
- Asian Art Museum
- Art of Islamic Pattern
- University of Massachusetts | MJA Blog

Folktales:

- Shireen Farhad (Folkloristan);
- Shireen Khusrow (Nizami);
- Mast and Sammo (Folkloristan);
- Heer (Waris Shah);
- Momal Rano (Shah Abdul Latif);
- Yousaf Zulaikha (Jami);

