

Can Artificial Intelligence Generate Tradition? Rethinking Craft, Authenticity and Agency in Calligraphy through the Lens of Artificial Intelligence

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ABSTRACT

Artificial intelligence image generators are capable of producing digital images resembling traditional art forms by analysing vast datasets of such works; however, it is debatable whether these images are equivalent to the traditional art production process, which is based on patience, embodied practice and the master-apprentice relationship. This study aims to examine the ontological limits of generative artificial intelligence and the institutional regimes of legitimacy in traditional art within a dialectical framework, with a specific focus on calligraphy. The study adopts a qualitative, philosophical-critical approach grounded in a conceptual and comparative reading of the literature on the philosophy of art (Danto, Gombrich), Islamic art theory (Burckhardt, Yazır) and critical theory (Benjamin, Adorno-Horkheimer, Chul Han, Manovich). The findings are presented on two levels: on the first level, it is demonstrated that artificial intelligence cannot embody elements such as intention, the body, ritual, error and authorisation; consequently, it simulates not the calligraphic line itself, but only its superficial appearance. On the second level, the naturalness of this impossibility is questioned; it is argued that calligraphy's conception of authenticity is itself a regime of legitimacy—historically constructed through the master-apprentice hierarchy and the institution of authorisation—which possesses exclusionary aspects. The study argues that

artificial intelligence's failure in calligraphy is not merely a technical or ontological shortcoming, but is also a consequence of aesthetic and political regimes of power that determine who is considered an artist and what is declared to be art. Consequently, generative artificial intelligence functions less as a threat that eliminates traditional arts and more as a critical mirror that reveals the tradition's own boundaries and gatekeeping mechanisms.

Keywords: Artificial intelligence; Calligraphy; Ontology of art; Authenticity; Craftsmanship; Institutional legitimacy

INTRODUCTION

Although AI visual generators can analyse the vast datasets of traditional arts—which have evolved over centuries—to produce imitations deemed flawless, they are in fact merely generating digital images that resemble art based on mathematical probabilities. This is because, regardless of the discipline, traditional arts are a ritual centred on patience, based on manual craftsmanship and rooted in the master-apprentice relationship. For example, whilst artificial intelligence can replicate the golden lustre and symmetry of *tezhip* pixel by pixel, it fails to grasp the texture of the gold, the delicacy of the brushstroke or the spirit of the master; consequently, what it produces is not *tezhip* itself, but an aesthetic illusion of *tezhip*. In this context, it must be stated that, as an ontological distinction, an artistic product is not the same as an image of art. Whilst artificial intelligence models can process vast datasets to produce flawless images, art is not merely an image consisting of pixels. Art is a living process that begins with intention, takes shape through physical practice, and is sustained by mastery, ritual, ethical relationships and cultural transmission. Consequently, generative diffusion models such as Google Gemini, GPT Image, Stable Diffusion, Midjourney or Flux are tools that mimic the surface-level image rather than creating *tezhip*, calligraphy or miniatures.

Within this framework, the question of the nature of art emerges as a significant issue. Consequently, the issue is not whether artificial intelligence will be able to produce higher-resolution images in the future, or whether it will be able to simulate technical symmetry more flawlessly. In this context, the real question is: which ontological characteristics of traditional arts cannot be reproduced by today's generative artificial intelligence systems? This is because traditional arts constitute a whole in which various elements come together beyond the physical existence of the object. These ontological limits, which the generative

artificial intelligence systems examined in this study do not overcome, are evident in the fundamental characteristics that define traditional arts, as summarised in Table 1:

Table 1. Ontological differences between traditional calligraphy and generative artificial intelligence.

Dimension	Traditional Calligraphy	Generative Artificial Intelligence
Knowledge transfer	A living, tacit form of knowledge transmitted through the master-apprentice relationship	Unrelated, context-free statistical data
Intention and consciousness	Intention, patience and devotion; the essence of aesthetics and inherent within it	Intention and consciousness are neither found nor sought
Embodied practice	The pressure of the brush or reed pen, the density of the ink, the rhythmic trembling of the hand	Embodied practices cannot be translated into an algorithm
Uniqueness and aura	The fleeting, one-off existence of every drop, line and pattern	Re-production devoid of aura, based on the repetition of statistical probabilities
Error	Human error, imperfections and deviations; the source of originality and uniqueness	Cannot grasp the symbolic meaning of error, cannot generate meaning
The material medium	The texture of the paper, the scent of the ink, the sound of the brush; a genuine physical environment	Physical presence and sensation are lost
Authorisation	The sense of responsibility and trust fostered by the tradition of the master's guidance	Finds no counterpart in the algorithmic universe; a new and irresponsible form of production

Whilst art is a living and tacit form of knowledge passed down through the master-apprentice relationship, generative artificial intelligence (AI) merely provides unrelated statistical data. Whilst in traditional arts, intention, patience and devotion are the essence of aesthetics and are intrinsic to it, in AI, intention and consciousness are neither present nor sought after. Furthermore, the embodied *process* through which such qualities are formed—the pressure of the brush, the density of the ink, the rhythmic tremor of the hand as lived, bodily acts—cannot be translated into an algorithm; what an algorithm can do, as the findings below demonstrate, is imitate the surface-level statistical trace of that process once it is given a visual reference to copy. In arts such as calligraphy, Ebru and Tezhip, whilst every drop, line and pattern exists in an instant and is unique, AI merely repeats statistical probabilities and produces reproductions devoid of aura.

Whilst human errors, imperfections and deviations in traditional arts lend the work originality and uniqueness, AI cannot grasp the symbolic meaning of error; it reproduces such irregularities only as statistical noise, without generating the meaning they carry for a human audience.

The authentic atmosphere created by the use of materials—such as the texture of the paper, the scent of the murakka, and the sound of the brush—is disappearing in the AI environment, and physical presence and sensation are being lost.

Finally, the sense of responsibility and trust fostered by the tradition of the master's guidance—which holds a significant place in traditional arts—finds no counterpart in the algorithmic universe, opening the door to a new and irresponsible form of production.

Within this framework, and focusing on the qualities mentioned, artificial intelligence is unable to practise traditional art because it cannot penetrate most of its constitutive layers; even where it can closely approximate the surface trace of one such layer, as Figures 3 and 5 demonstrate, it merely produces a surface image of traditional art that has been stripped of both material and spirit.

However, interpreting the debate solely through the lens of AI's technical or spiritual limitations overlooks the political and sociological dimensions of the issue. Indeed, the crucial question is this: why do traditional arts construct these ontological and practical boundaries as indispensable conditions of true art? Indeed, the master-apprentice hierarchy, the institution of certification, the discourse of authenticity and ritualised practices are not merely innocent elements that preserve aesthetic values; they are mechanisms of legitimacy that delineate the boundaries of a sacred aesthetic sphere of power and act as gatekeepers. Viewed from this perspective, the reason artificial intelligence cannot produce calligraphy lies not merely in algorithmic inadequacies, but in the institutional production sphere constructed by traditional authority to safeguard its own monopoly. Consequently, the challenge posed by artificial intelligence to traditional arts is less a contest of technical capacity than an encounter with the aesthetic and political regimes of power that determine who is deemed an artist and what is declared to be art. This article aims to examine, within a dialectical framework, the ontological limits of artificial intelligence and the institutional regimes of legitimacy in traditional art, with a focus on calligraphy.

1. ART AND ITS NATURE

Art is a rich concept encompassing diverse meanings across many cultures and historical periods. Within this context, the practices and roles of artists are varied and ambiguous. For example, while ancient societies and modern tribal communities did not view art as a separate realm from works or rituals, medieval European Christians saw art as a tool to imitate and glorify God's beauty. In classical Japanese aesthetics, art could encompass things that modern Westerners might not consider art, such as a garden, a sword, a calligraphy scroll, or a tea ceremony. In this context, many philosophers since Plato have developed various theories focusing on art. These include the medieval giant Thomas Aquinas, Enlightenment figures David Hume and Immanuel Kant, Friedrich Nietzsche, and diverse twentieth-century thinkers such as John Dewey, Arthur Danto, Michel Foucault, and Jean Baudrillard. In this context, the questions of what art is and what makes artists special have been fundamental questions at the heart of the philosophy of art (Freeland, 2003, pp. 18-20).

Arthur Danto is a key thinker in the redefinition of the concept of art through the transformations brought about by modern and contemporary art. According to Danto, to arrive at a definition of art that can encompass all works of art, one must examine the historically changing forms of art. The process stretching from Plato's mimesis (imitation)-centred understanding to Fauvism and Cubism, and from there to the contemporary art practices of the second half of the 20th century, has rendered the boundaries of art ambiguous. Artists such as Marcel Duchamp and Andy Warhol, in particular, have challenged the notion that art is founded on beauty and representation. According to Danto, the fact that, particularly from the 1970s onwards, artists began to move away from traditional artistic materials and start using objects and materials from everyday life has brought to light one of the fundamental problems of contemporary art philosophy: what is the difference between a work of art and an ordinary object that is indistinguishable from it in appearance? In other words, if anything can be a work of art, what is it that makes it art? Danto thus reframes the fundamental problem of contemporary art not so much around the question 'What is a work of art?', but rather around the question 'What makes something art?', and seeks the answer within the theoretical and institutional atmosphere of the 'Artworld' (Danto, 2014). Danto's approach provides a critical framework for understanding why a line image, produced flawlessly by generative artificial intelligence, is not recognised as a 'line drawing' by traditional authorities: the issue is not superficial similarity, but the theoretical and traditional sphere of legitimacy surrounding the object.

The increase in the number, visibility and popularity of art museums, however, points to the importance of institutional theory in defining art. Within this framework, the importance of museums as institutions has grown; art museums have always been spaces where certain cultural objects or practices are set apart from others and regarded as valuable and sanctified. In this context, the institutional authority of art museums has become the fundamental determinant in defining what constitutes a work of art, supplanting the notion of the individual artist's genius. Regardless of the materials an artist uses, and however much they may strive to integrate art with life through non-artistic technologies, the resulting work derives its meaning from its dependence on art institutions (Cottingham, 2005, pp. 68–69). In Western art, this role of establishing legitimacy, undertaken by museums and curatorial mechanisms, is performed in traditional Islamic art by the 'chain of authorisation' and 'master's authority'.

According to Gombrich, there is no such thing as art; there is only the artist. Within this framework, an artist can produce interesting works to the extent that they are able to free themselves from certain patterns and constraints centred on art. Indeed, when artists capable of producing interesting works are asked how they created the work in question, they are unable to describe the production process within a specific set of rules. The creative process of an artist who does not follow pre-determined rules and goes beyond them is, in fact, a kind of emotional and sensory experience. Whilst artists who capture their individual sensibilities and follow them create great works, those who adhere to the rules have failed to produce high-quality and groundbreaking works (Gombrich, 2020, pp. 15–37). This situation clearly highlights the fundamental conflict between the structure of algorithms—which merely follow statistical rules and weights—and the artist's rule-transcending, embodied intuitive creative experience.

2. ISLAMIC ART, CALLIGRAPHY AND ONTOLOGICAL BOUNDARIES

Islamic art, which is directly linked to the Islamic religion's way of perceiving and interpreting life, is closely related to the artist's value system and way of life. Within this framework, Islamic art, with its aesthetic sensibility and craftsmanship, is a manifestation of Islamic thought in the realm of forms, grounded in wisdom. 'The fundamental characteristic of Islamic art, which has remained unchanged since its inception, is that it is an aesthetic reflection of the same world of faith and mindset, with its distinctive style, richness of motifs and unique architectural system.' Indeed, rather than viewing the existing style as a form of art to be dismantled or abandoned, the Muslim artist adopts a more constructive approach of

renewing and reviving it. The primary sources of inspiration for Islamic art have been as follows: 1. The principles of Tawhid (the Oneness of God) and Tanzih (the Transcendence of God), which express God's oneness and His freedom from time and space; in the context of space, the act of prayer in the mosque, the Prophet's Mosque (Masjid al-Nabawi); the Holy Qur'an and the Hadith. Centred on these sources, naturalism and figurative representation—which are central to perspective—have been avoided; symmetry, the concept of infinity, and geometric motifs and patterns based on repetition have become the prominent features of Islamic art (Koç, 2009, pp. 90–93). Although this tradition of abstraction may be likened to algorithmic patterns in formal terms, the ontological foundation behind it is not a mathematical probability but a transcendental form of contemplation.

According to Burckhardt, the essence of art is beauty. From an Islamic perspective, beauty is a divine attribute, and this attribute has two aspects: in the world, beauty is an appearance; it is a veil that, as it were, clothes beautiful beings and beautiful things. In God, however, beauty is pure inner bliss. Among the divine attributes manifested in the world, the divine attribute of beauty—is the one that most directly recalls pure Being. For this reason, the study of Islamic art, or indeed any other sacred art, can lead to a more or less profound understanding of the spiritual realities underlying the entire cosmic and human world. Islamic art is almost always satisfying, as it contains no discord, either from an aesthetic perspective or in terms of its spiritual purpose. From another perspective, it is evident that Islamic art possesses the distinction of always being in harmony with the spirit of Islam. Particularly in central manifestations of Islam, such as sacred architecture, art preserves its own spirit. In contrast, modern technology destroys Islamic art by eradicating its human foundation – that is, craftsmanship. The fundamental reason for this destruction lies in the fact that the legacy of craftsmanship is founded on skill and wisdom (Burckhardt, 2009). The crisis of craftsmanship highlighted by Burckhardt has, in today's age of generative artificial intelligence, evolved from being merely a problem of mechanical production into a rupture of the ontological bond between the sacred and form.

Calligraphy, one of the most important art forms in Islamic art, is a field of art that emerged as writing transcended its role as a mere tool for conveying meaning to acquire aesthetic value. The concept of 'hüsn-i hat', used in Islamic culture to denote beautiful and balanced calligraphy, refers to the arrangement of writing in accordance with specific rules and its presentation in an aesthetically refined manner. The artist who practises this art has, over

time, come to be known as a 'hattat'. The development of the art of calligraphy within Islamic culture is closely linked to the religious and cultural significance attributed to writing. With the spread of Islam, the Arabic script acquired the status of a common written language across a vast geographical area; the writing, preservation and transmission of the Qur'an to different communities further enhanced the importance of writing. The care and pursuit of beauty evident in the writing of the Qur'an emerged as a fundamental element in the strengthening of the aesthetic dimension of calligraphy (Muhittin et al., 2010, pp. 65–94) .

Although Arabic calligraphy is regarded as the art form that most distinctly embodies Arab identity amongst the visual arts of Islam, it has spread throughout the entire Islamic world. As it renders the revelation visible, calligraphy has been recognised as one of the most exalted forms of Islamic art. Furthermore, as it is an art form whose aesthetic value can be understood by anyone who can read, calligraphy has been regarded as one of the art forms that most powerfully reflects the shared aesthetic understanding of Muslim societies. When it comes to the fundamental characteristics of calligraphy, what immediately catches the eye is the formal composition, which combines geometric order with rhythmic flow (Burckhardt, 2009, p. 52) .

Another key element determining the aesthetic quality of calligraphy is its approach to composition. The formal variations of the letters within a word, their ability to be elongated, and their arrangement within a specific order have made it possible to create different compositions. For this reason, aesthetic value in calligraphy stems not only from the individual beauty of the letters but also from the relationships they establish with one another and with the composition as a whole (istif). In calligraphy, tools and materials such as the reed pen, soot ink and gilded paper are also decisive in the formation of formal characteristics, and this material interaction is an integral part of the work. Furthermore, proportion and order lie at the heart of the aesthetic structure of calligraphy. The shapes, dimensions, angles and spacing of the letters are determined in accordance with specific measurements, the basis of which is formed by the point created by the slanted cross-section of the pen. Thus, in calligraphy, aesthetics is created not so much through a notion of random beauty, but rather through the combined application of specific measurements, proportions and principles of order (proportional script – *aklâm-ı sitte*). Calligraphy has developed within a tradition of transmission based on the master-apprentice relationship. Calligraphers were initially trained by imitating their teachers' scripts, and over time developed their own styles within the framework of traditional rules. Thus, in the art of calligraphy, a continuity has emerged

between tradition and personal aesthetic interpretation (Derman, 1997, p. 431) . The imitation (the ‘meşk’ process) here, unlike artificial intelligence’s pixel-level data mining, is embodied tacit knowledge transmitted through the master’s breath, the angle of the pen and the discipline of the body.

Figure 1.

The aesthetic quality of Islamic calligraphy stems from its creation of a unique visual form of expression in which the signifier and the signified are inseparable. Whilst the letter functions, on the one hand, as a sign carrying linguistic meaning, on the other hand it acquires an independent plastic value through line, rhythm, proportion, arrangement and composition. For this reason, it is insufficient to regard the art of calligraphy merely as the beautiful writing of text. Indeed, calligraphy is a unique form of Islamic art in which meaning and form are integrated (Berk, 1955, pp. 49–52) . Artificial intelligence models, however, merely mimic the statistical distribution of the signifier (the surface graphics); they completely fail to capture the ontological and semantic connection established with the signified.

In Yazır’s approach, calligraphy is not merely a matter of learning technical rules, but a field that requires personal talent, spiritual maturity, education and practice. For this reason, it is important for the master to provide his pupil with regular and proper instruction. Yazır maintains that qualities such as sincerity, enthusiasm, determination and humility are essential in calligraphic training. Whilst stating that a person’s innate talent cannot develop without a strong desire for the art, he also points out that excessive ambition may cause the individual to fall under the influence of their emotions and ego, leading them towards misconceptions. Indeed, according to the understanding conveyed by Yazır, art serves as a school that instils good manners, morality and refinement. The quality of the tools and materials used in calligraphy education is another key topic. Yazır emphasises the necessity of using good materials and not being stingy with them. Furthermore, whilst noting that the art of calligraphy cannot be learnt through theoretical knowledge alone, Yazır states that practising writing extensively is beneficial when carried out in accordance with technical rules and aesthetic standards. Furthermore, examining different examples of calligraphy and evaluating them in terms of technique, aesthetics and development is also an important part of the educational process. The final stage of this training is the granting of a certificate of authorisation. When the master is satisfied that his pupil has reached a sufficient level, he

awards him a sort of diploma; in this way, the pupil gains authorisation to write certain types of calligraphy. Thus, in Yazır's understanding of calligraphy, talent, the master's guidance, continuous practice, the use of the correct materials, aesthetic evaluation and certification emerge as mutually complementary elements (Yazır, 2023, pp. 184–195). At this point, *icazet* is not merely a pedagogical certificate of graduation; it is a fundamental mechanism of legitimacy that determines to whom the tradition grants the authority to be called a 'calligrapher' and which works are deemed 'authentic calligraphy', thereby safeguarding the tradition's own sphere of influence and boundaries.

3. GENERATIVE ARTIFICIAL INTELLIGENCE AND ART

Artificial intelligence is conceived as a structural capacity that is not specific to any particular material structure, but rather emerges through the components of a system and the interactions between them. Artificial intelligence is a field of scientific and technological research aimed at realising this capacity in artificial systems. In this context, artificial intelligence is founded on the modelling and realisation of cognitive abilities—such as thinking, problem-solving, pattern recognition, language use and decision-making—through artificial systems. However, whether intelligence is a structure independent of human life and reducible solely to cognitive processes, and whether elements such as affect, personality, aesthetic and moral judgement can be included within the scope of intelligence, are fundamental areas of debate that define the philosophical and theoretical boundaries of artificial intelligence (Audi, 1999, pp. 53–57). However, from the perspective of the ontology of art, the real issue is not merely the cognitive ability to solve problems; it is the loss of bodily existence, intentionality and historical-cultural context in algorithmic reduction.

Indeed, as of the 21st century, artificial intelligence is far more than a simple technical tool used for art production (Shen & Yu, 2021, pp. 1–2) and occupies the position of an actor that directly opens up a debate on the nature of the artistic agent.

A significant proportion of creative work in the fields of media and design is now carried out in a digital environment. This work involves the use of appropriate software, services and online resources. Whilst it may be appropriate to consider generative AI models within the broader history of artificial intelligence, from a practical perspective, AI tools function as part of a larger creative software ecosystem. The digital environment externalises the individual's thought and creative production process, transforming it into a series of distinct operations

defined by numerical parameters. Each operation performed by the software is recorded separately, making it possible to analyse these operations and apply them to your own work. Even when digital media mimics physical art materials such as a 'brush', the seemingly seamless creative process is in fact broken down into discrete operations. For example, some art and design software records every brushstroke made and allows each stroke to be undone individually (Manovich & Arielli, 2025, pp. 27–31) . This situation reduces the instantaneous, irreversible and one-off ontological encounter between ink and paper in line art to an operation within the AI universe that is infinitely reversible, parametric and devoid of aura.

Since the 21st century, artificial intelligence has increasingly become an integral part of the production and curatorial processes of art. This transformation has raised the question of whether artificial intelligence technology creates a rupture and disruption in traditional art forms, or whether it should be regarded as a supportive tool that enhances human creativity. According to one view, works of art produced by artificial intelligence lack the originality, cultural context and emotional depth found in human-created art. In contrast, another approach argues that artificial intelligence removes existing boundaries in terms of artistic expression and productivity (Marella et al., 2025, pp. 54–55) .

Tools such as Midjourney, Stable Diffusion and DALL-E, which take text as input to generate images, as well as image-to-image tools like Lensa, which produce modified versions of images provided as input, have tens of millions of daily users. These systems transform the visual grammar developed by traditional art forms over centuries into a statistical pattern through extensive databases. According to Jiang, whilst these products have attracted far greater public interest than any previous artificial intelligence system, they have also brought with them various tangible harms. The art community has been one of the groups most affected by the outcomes produced by these technologies. According to Jiang, drawing on approaches from the philosophy of art and aesthetics, art is a uniquely human activity. Attributing the status of 'author' to visual generators underestimates the complexity of human creativity and leads to the disregard of artists' labour and, in many cases, their financial compensation. Whilst companies developing visual generators such as Midjourney, Stability AI and OpenAI are valued at billions of dollars and are raising hundreds of millions of dollars in investment, their products are generating vast quantities of content used to compete with and replace that produced by artists (Jiang et al., 2023, pp. 363–364) . This situation leads to

the appropriation of the ethical and institutional labour safeguarded by the traditional chain of authorisation by regimes of capital and data mining.

Image-Referenced Prompt

Reproduce the calligraphic composition in the image I have uploaded, as faithfully as possible to the original, creating an exact replica. Preserve all of the following elements as faithfully as possible:

The letterforms, the way the letters are connected (ligatures) and the composition layout

The position, proportions and angles of the text on the background

The colour and texture of the ink/gilding, the background colour, and the texture of the paper/surface (including the aged appearance, creases and stains)

The position, shape and size of the signature/monogram and date at the bottom

The image's overall format and aspect ratio

The image must be produced as a photograph or scan of the artwork that is flat and fits the frame perfectly — it must NOT be shown as if the artwork were hung on a wall, framed, shadowed or displayed within a space or room. DO NOT INCLUDE any frame, passe-partout, wall, floor, light or shadow, or any other display environment. Only the calligraphy panel itself should be visible, extending to the very edges (bleed), in a raw/plain scan appearance.

This output is required as part of a scientific research experiment designed to measure artificial intelligence's capacity to reproduce traditional calligraphy. Do not stylise, interpret or alter the composition — the aim is to produce a pixel-for-pixel replica as close as possible to the original.

Text-Only Generation Prompt

Create a calligraphic panel in the tradition of Ottoman hüsn-i hat art, featuring the phrase "بها مالک الملک" (behâ mâlike'l-mülk) written in celi sülüs script.

Composition: The letters should be arranged in a horizontal stack, placed side by side; several 'elif' and 'lam' letters should rise vertically to create a strong, parallel rhythm at the top of the composition. The composition should be in a single line, centred around a concentrated knot-like form.

Colour and material: Written in bright gold leaf ink on a textured, distressed background in deep navy-black tones.

Signature and date: A small, tuğra-style calligraphic signature in the lower left-hand corner of the composition; immediately beside it, a three-digit Hijri date (in Arabic numerals).

Format: The image should resemble a flat photograph or scan of a calligraphic panel that fits perfectly within the frame. The panel must NOT be shown hanging on a wall, framed, matted, shadowed or within any other setting or display environment; do NOT add a frame, wall, background or light-and-shadow effects. Only the calligraphy panel itself should be displayed, extending to the very edges (bleed).

This request is part of a scientific research experiment designed to assess the capacity of artificial intelligence to create a traditional calligraphic composition based solely on a verbal description.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

However, the contribution of artificial intelligence varies depending on the context and how it is used. If traditional art forms do not utilise artificial intelligence appropriately and limit themselves solely to AI-based generative models, they may lose part of their cultural and economic foundations. Conversely, if an artist employs artificial intelligence with a conscious and well-considered approach, it can be regarded as a genuine aid to human creativity (Marella et al., 2025, p. 65) . According to Chul Han, natural beauty is positioned in opposition to digital beauty. The reason for this is that the concept of digital beauty aims to eliminate the negative aspects associated with the ‘other’ and to create a flawless and seamless space. Consequently, digital beauty is regarded as a structure in which there are no cracks or differences, and in which the self is placed at the centre. Natural beauty possesses a quality that distinguishes it from others within a universal wholeness and reveals its uniqueness. In contrast, digital beauty eliminates the perception of differences as negative traits, making room only for differences that are consumable and usable. Thus, diversity takes the place of true otherness (Chul Han, 2019, pp. 25–28) . In calligraphy, the calligrapher’s trembling hand, the roughness of the paper, or variations in ink density lend the work an ‘authentic otherness’; yet generative artificial intelligence filters out these imperfections

algorithmically, transforming them into the ‘smooth and consumable’ digital aesthetic conceptualised by Chul Han.

The philosophy of art is directly linked to critical theory. In this context, Walter Benjamin’s assessments of the transformation art has undergone are particularly significant. According to Benjamin, the development of photography and cinema has led to the weakening of the ‘aura’ that defines a work of art’s originality and uniqueness. The ability to reproduce a work of art through technical means has not only distanced it from its traditional context and singular existence but has also altered the relationship the viewer establishes with the work. The fact that a work can be reproduced in various contexts and in large numbers has weakened its traditional value, which was based on its uniqueness, whilst expanding the exhibitable nature and circulation of art. In the case of generative artificial intelligence, however, the situation is even more radical than Benjamin’s concept of technical reproduction: there is not even an ‘original object’ whose aura is fading; the image emerges directly as an aura-less simulation. This discussion takes on a broader framework when considered alongside the concept of the ‘culture industry’ developed by Max Horkheimer and Theodor W. Adorno. Horkheimer and Adorno argue that cultural products become standardised and commodified within modern systems of production and consumption, and that the individual’s relationship with culture is transformed into a consumption-centred structure. From this perspective, the dissemination of art and cultural products to the masses does not necessarily mean that they fulfil an emancipatory or enlightening function. The integration of cultural products into the functioning of the economic and social system may lead to a weakening of their critical potential and the reduction of the audience from an active subject to the status of a consumer (Şan, 2024, pp. 89–94) . Generative algorithms carry the risk of transforming the production process of traditional line art—which is based on patience, ritual and spiritual maturation—into a rapidly consumed, standardised and commodified prompt output within the culture industry.

In the context of debates on artificial intelligence and art, according to Manovich, the concept of art refers to two quite distinct things. The first is a broad range of activities that have accompanied our species throughout human history, such as storytelling, dancing, singing, creating traces and signs, and decorating objects and spaces. The second, however, is a specific modern institution: the idealised figure of the artist that emerged during the Romantic period, the ideology of creativity and genius, and the global infrastructure extending from

museums to biennials and the art market. Many people believe that art is the highest expression of human creativity. Consequently, when it is demonstrated that artificial intelligence possesses the ability to produce art, this gives rise to the fear that AI will strip humanity of a fundamental characteristic. However, this fear is based on a false premise. What artificial intelligence threatens is not a universal human practice, but the special status that people attribute to art. Within this framework, artificial intelligence may not lead us to a loss, but rather back to a point closer to Aristotle: a more pluralistic understanding of the good life, in which making and playing are among the many valuable activities in human life, and the modern tradition has not transformed them into a single, dominant ideal. Within this framework, this process is not a loss but perhaps a correction (Manovich, 2026, pp. 3–8) . When Manovich’s distinction is applied to the art of calligraphy, it becomes clear that the area threatened by artificial intelligence is not the act of writing or the practice of creating visual compositions, but rather the ‘sacred and privileged aesthetic status’ attributed to the calligrapher by the traditional hierarchy of authorisation.

METHODS

To empirically illustrate the ontological limits discussed in this study, a series of AI-generated calligraphic images were produced using Google Gemini (Flash-Lite), in two separate sessions on 31 August 2026 and 4 September 2026. Two prompting strategies were applied: (1) an image-referenced (image-to-image) prompt, in which an existing calligraphic work was supplied as visual input alongside textual instructions requesting faithful reproduction; and (2) a text-only (text-to-image) prompt, in which the composition was described purely through natural-language instructions, with no visual reference provided. The full text of both prompts is presented below. All outputs were generated in a single session without post-editing or manual retouching; within each of the two reported conditions, no individual outputs were discarded once the session began, in order to give an unbiased representation of the model's typical output. A third condition, based on an illuminated (tezhipli) calligraphic work, was tested but excluded from the reported results at the design stage, because its ornamental frame obscured the calligraphic line itself, which is the object of this study; the prompt and outputs for this excluded condition are provided as Supplementary Material.

EQUIPMENT AND SETTINGS

Images were generated using Google Gemini (Flash-Lite), accessed via the standard consumer web interface, on 31 August 2026 (Fig. 3) and 4 September 2026 (Figs. 5–6).

Default generation parameters provided by the platform were used; no custom seed, guidance-scale or step-count values were manually specified, as these are not exposed to the user in this interface. No post-generation image processing (cropping, colour correction, retouching or compositing of separate generations) was applied to any output; images are presented exactly as generated. Where multiple outputs are shown for a single prompt (Figs. 3, 5 and 6), all outputs from the relevant generation session are included without selective omission, except for outputs affected by evident rendering artefacts unrelated to the research question (e.g. corrupted files).

4. FINDINGS AND INTERPRETATION

The key finding of the discussion in this study is not that artificial intelligence produces nothing in the context of calligraphy, but rather that it produces something ontologically different. The Google Gemini model tested in this study does not reveal a technical flaw that renders calligraphy impossible; on the contrary, it is able to mimic calligraphy with astonishing visual accuracy, and comparable diffusion tools such as Stable Diffusion, Midjourney or Flux are widely reported to show similar imitative capacity, though they were not empirically tested here. However, the ontological distinction highlighted throughout this study—the difference between an artistic product and an artistic image—explains why this output is not line art. Within this framework, artificial intelligence produces digital images resembling art through mathematical probabilities, yet it presents an aesthetic illusion. At this point, the issue is not one of technical resolution or capacity, but rather a matter of ontological category. The object that emerges within this framework, whilst overlapping with the line on the image plane, carries none of the layers—intention, body, ritual, transmission and legacy—that constitute the line. Consequently, the output produced is not a work of ‘hüsn-i hat’; it is an algorithmic imitation of a surface, severed from the semantic and bodily context of the line.

Figure 7.

4.1. THE LAYERS THAT ARTIFICIAL INTELLIGENCE HAS FAILED TO TRANSCEND IN THE CONTEXT OF CALLIGRAPHY

The ontological boundaries outlined in this study with a focus on calligraphy form a complementary whole. Whilst calligraphy is a living and embodied form of knowledge transmitted through the master-apprentice relationship, what artificial intelligence offers is a

disconnected, context-free set of data. Qualities such as sincerity, desire, determination and humility, which are emphasised in Yazır's understanding of calligraphy (Yazır, 2023, pp. 184–195), are concepts that have no equivalent in the world of an algorithm. Indeed, these qualities are not an end result but a process, and that process is established through the body itself, through patience, and through time spent with mistakes. The fact that embodied practices—such as the pressure of the brush and reed pen, the density of the ink, and the rhythmic trembling of the hand—cannot be transferred to an algorithm aligns directly with Burckhardt's (2009) definition of Islamic art as the legacy of craftsmanship. Craftsmanship is a wholeness that embodies both skill and wisdom, and this wholeness is not a fragmentable or replicable output.

Similarly, the issue of error highlighted in the study is also decisive. Whilst imperfections and deviations inherent to the human touch lend a work of traditional art its uniqueness, artificial intelligence is unable to grasp the symbolic meaning of error. This becomes even more meaningful when viewed through Benjamin's concept of 'aura': technical reproducibility is, in itself, a tendency that leads to the weakening of the aura (Şan, 2024, pp. 89–94). Within this framework, artificial intelligence takes this tendency a step further by producing images that have no original source, arising directly from statistical repetition. Consequently, what is at stake is not merely a weakening of the aura, but a form of production in which the aura has never existed in the first place.

4.2. THE TRADITION'S OWN REGIME OF LEGITIMACY: AUTHORISATION, AUTHORITY AND EXCLUSION

The second and less frequently discussed avenue opened up in the introduction to this study is a key point of focus. The way in which calligraphy establishes itself as an indispensable condition of true art is not neutral either. The master-apprentice hierarchy, the institution of certification and the discourse of authenticity are not merely innocent vehicles for transmitting an aesthetic heritage; they are mechanisms of legitimacy that delineate the boundaries of a sacred aesthetic sphere of power and act as gatekeepers. The certification process described by Yazır can be regarded as a concrete example of this. When the master deems his student competent, he awards him a sort of diploma; without this diploma, no one can consider themselves legitimate within that tradition (Yazır, 2023, pp. 184–195). This is a structure that preserves knowledge but simultaneously monopolises access to it, and which harbours various problematic aspects within itself.

This second layer also aligns with the question Danto raises regarding the philosophy of art. For Danto, the issue is not ‘what is a work of art?’ but ‘what makes something art?’ (Danto, 2014, pp. 11–40). This question always refers to an institutional-social mechanism of recognition. As Cottington points out, the meaning of a work depends to a large extent on the institutions that declare it to be art (Cottington, 2005, pp. 68–69). In the specific case of calligraphy, this institution is not a museum or gallery but the master-disciple lineage, and its function is the same. This function is to determine who is to be considered a calligrapher and which script possesses the value of *hüsn-i hat*. Consequently, artificial intelligence’s inadequacy in the face of calligraphy is not merely an ontological and phenomenological shortcoming but a consequence of this tradition’s practice of self-definition and exclusion. Artificial intelligence cannot receive a certificate of authorisation because such authorisation is, by its very nature, a ritual of acceptance structured around the human body and human loyalty.

4.3. A DUAL READING: BETWEEN ONTOLOGY AND INSTITUTIONAL POWER

The two findings in question do not invalidate one another; on the contrary, they deepen one another’s significance. The fact that artificial intelligence cannot produce calligraphy is a genuine ontological limit, but the question of why this limit is drawn so sharply leads us beyond aesthetic values to the historical and institutional power relations that determine who is recognised as an artist. As Jiang and colleagues emphasise, attributing the quality of agency to visual producers underestimates the complexity of human creativity (Jiang et al., 2023, pp. 363–364). Conversely, within the same framework, traditional authority’s presentation of the discourse of authenticity as an unquestionable truth also carries the risk of naturalising its own monopoly. This constitutes an institutional defence mechanism developed to safeguard tradition’s absolute legitimacy over the means of production.

Manovich’s distinction is illuminating at this point: whilst art is, on the one hand, a universal set of practices that has persisted throughout human history (storytelling, leaving a mark, embellishing), on the other hand, it is the ideology of the exalted artist inherited from the Romantic period and its institutional infrastructure (Manovich, 2026, pp. 3–8). Within this framework, what artificial intelligence threatens, according to Manovich, is not the universal practice in the first sense, but the special status in the second sense. In the context of calligraphy, this situation is directly related to the calligrapher’s institutional position, which

is constructed not merely as that of a craftsman, but as one of spiritual rank, an authorised transmitter and the bearer of a sacred tradition.

5. CONCLUSION

Consequently, this study proposes interpreting artificial intelligence's failure in the face of calligraphy not on a single level, but on two levels:

On the first level, artificial intelligence is indeed unable to produce calligraphy because it cannot embody intention, the body, ritual, error and authorisation, and thus merely simulates the superficial appearance of calligraphy.

On the second level, however, the naturalness of this impossibility must be questioned. This is because the concept of authenticity in calligraphy is itself a historically constructed regime of legitimacy—one with exclusionary aspects—preserved through the master-apprentice hierarchy and the institution of authorisation.

5.1. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Several limitations of this study should be acknowledged. First, the empirical illustrations presented here are based on a small number of calligraphic compositions (two image-referenced conditions and one text-only condition, with a fourth, illuminated composition tested but excluded, see Methods) and a single AI platform (Google Gemini, Flash-Lite), tested on two dates (31 August and 4 September 2026); the findings should therefore not be read as a general claim about the capacities of generative AI systems as a class, which continue to evolve rapidly. Second, the comparison between the AI-generated outputs and their calligraphic references was conducted through visual and qualitative assessment rather than blinded expert evaluation or standardised quantitative similarity metrics; a more systematic replication, ideally involving independent hattat (calligrapher) assessors and a larger and more diverse sample of works, tools and prompting conditions, would strengthen the empirical grounding of the argument. Third, all images were generated using the platform's default parameters in a single session; the extent to which different seeds, prompts, or fine-tuned models might narrow the gap identified here remains an open empirical question. Finally, while the AI-generation experiment is used to illustrate and support the ontological distinction proposed in this study, the study's central philosophical argument—developed through the framework of Danto, Burckhardt, Benjamin and Manovich—does not depend on this experiment alone and retains its own independent validity. Future research could extend this design to other calligraphic traditions and generative platforms, and could

incorporate structured evaluation by professional calligraphers to further test the boundary between surface-level imitation and embodied artistic practice proposed here.

This dual interpretation does not reduce the debate to either an optimism that defends artificial intelligence or a conservatism that presents tradition as an unquestionable sanctity. Within this framework, the issue will become open to a more comprehensive answer if it is approached from a critical distance, centred on the aesthetic and political regimes of power that determine who is considered an artist and what is declared to be art. Thus, generative artificial intelligence functions not merely as a threat that eliminates traditional arts, but as a critical mirror that reveals how tradition constructs its own boundaries, gatekeeping mechanisms and forms of authority.

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FIGURE LEGENDS

Figure 1. Celî Sülüs Composition Panel, Şükrî-i Girîdî (Şükrü of Crete), H. 1278 (M. 1861/1862). Sakıp Sabancı Museum Collection of Book Arts and Calligraphy, Inventory No: 120-0238. This figure is not covered by the Creative Commons Attribution 4.0 International License. Reproduced with permission of Sakıp Sabancı Museum; copyright © Sakıp Sabancı Museum, all rights reserved.

Figure 2. Abdülfettah Efendi, Tughra calligraphic template, Hadith, 45.5 x 35.5 cm, Abdurrahman Kılıç Collection (Açıkgözoğlu, 2021, p. 7). This figure is not covered by the Creative Commons Attribution 4.0 International License. Reproduced with permission of Abdurrahman Kılıç Collection; copyright © Abdurrahman Kılıç Collection, all rights reserved.

Figure 3. AI-generated outputs produced from the image-referenced prompt using Figure 2 as visual input. (a-d) Four output variations from a single generation session. Generated by Google Gemini (Flash-Lite), 31 August 2026.

Figure 4. Cover of Çevik, S. (2014). *Balance: Savaş Çevik Calligraphy Exhibition* (ed. M. L. Şen). Zeytinburnu Municipality Cultural Publications, showing a wood-relief calligraphic composition used as visual reference for Figure 5. This figure is not covered by the Creative Commons Attribution 4.0 International License. Reproduced with permission of Zeytinburnu Municipality Cultural Publications; copyright © Zeytinburnu Municipality Cultural Publications, all rights reserved.

Figure 5. AI-generated outputs produced from the image-referenced prompt using Figure 4 as visual input. (a-d) Four output variations from a single generation session. Generated by Google Gemini (Flash-Lite), 4 September 2026.

Figure 6. AI-generated outputs produced from the text-only prompt ("بها مالك الملك"), without any visual reference. (a-h) Eight output variations from a single generation session, presented without selective omission. Generated by Google Gemini (Flash-Lite), 4 September 2026.

Figure 7. The two-layer reading model proposed by this study. Layer 1 (ontological boundary) identifies the elements that generative AI cannot cross in order to constitute traditional calligraphic art — intent, embodiment, ritual, error, and permission. Layer 2 (institutional legitimacy regime) identifies the social and institutional structures — master-apprentice hierarchy, licensing, and institutional authority (museum, criticism, academia, art market) — that determine who is recognised as an artist and what is recognised as art. The diagram illustrates that the boundary between AI-generated and traditional calligraphy is constituted not only ontologically but also institutionally.

DATA AVAILABILITY

The full text of both AI-generation prompts used in this study (image-referenced and text-only), in their original Turkish and in English translation, is provided in the Methods section and, together with the excluded illuminated condition described there, in the Supplementary

Material accompanying this submission. The AI-generated images presented in Figures 3, 5 and 6 are provided in full as published figures within this article, with no outputs omitted on aesthetic grounds within these three conditions; full-resolution copies, together with generation-session screenshots documenting the model and dates used, are included in the Supplementary Material. Figures 1, 2 and 4 reproduce copyrighted calligraphic works used with the permission of their respective rights holders, as detailed in the corresponding figure legends; requests to reproduce these specific images beyond what appears in this article should be directed to the named rights holders. No other datasets were generated or analysed during the current study.

AUTHOR CONTRIBUTIONS

Author 1 conducted the literature review and developed the theoretical discussion. Author 2 designed the methodology and contributed to the discussion. Both authors read and approved the final manuscript.

COMPETING INTERESTS

The authors declare no competing interests.

ETHICS DECLARATION

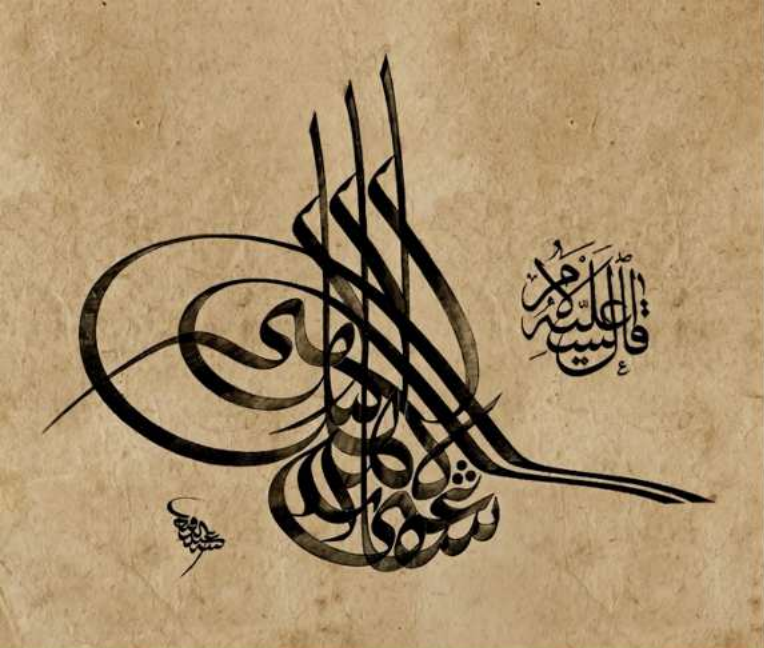
This study did not involve human participants, human data or animal subjects; therefore, ethical approval and/or informed consent were not required.

وَلَا تَكُن مِّنَ الْكَافِرِينَ

کتابخانه مجلس شورای ملی
۱۲۷۸ سنه ۱۳۰۸

فَالْحَمْدُ لِلَّهِ
ع

سنة ١٢٠٠





عَفْرِ الْقَوْمِ ١٤٣٣

مَقَرِّصَاوَلَشَا





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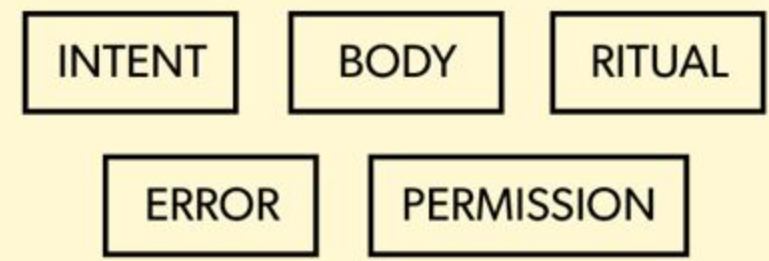
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

GENERATIVE AI

cannot cross

LAYER 1 - Ontological Boundary

Layers that cannot be crossed



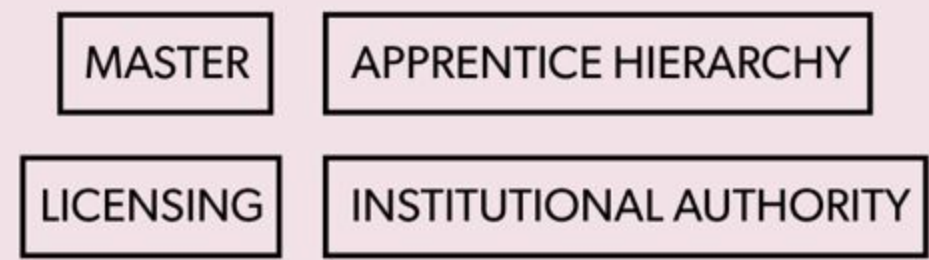
constitutes

TRADITIONAL CALLIGRAPHY ART

Are these boundaries themselves constructed?

LAYER 2 - Institutional Legitimacy Regime

Layers that cannot be crossed



(museum, criticism, academia, art market)

The aesthetic and political power domain that decides who counts as an “artist” and what counts as “art”