Value of AI calligraphy examined

SCIENCE & HUMANITIES

By LI GUODONG

At present, AI has become an important technological tool to pursue efficiency in modern society. If art could also be created or produced by AI, then our artistic needs would be met more swiftly and artistic productivity would also increase exponentially. In this context, various genres of AI arts are flourishing, among which the practice of AI calligraphy is making great progress.

Forms of AI calligraphy

AI calligraphy refers to calligraphy created using AI technology. More accurately, AI calligraphy becomes analogous to human creation, making a computer or machine capable of accomplishing calligraphic creation similar to that of a human artist. At present, there are three specific forms of AI calligraphy.

First of all, there is human calligraphy processed by AI technology, which takes human handwriting as prototype, and then applies AI technology to transform it into calligraphy works with the texture of brush lines. Such AI calligraphy is quite common on mobile phones or computer software.

The apps can not only match the handwriting style of the writer with different scripts, but also can make specific conversions according to the requirements of users. If they draw on touch screens, the speed and pressure of fingertips sliding can be used as input parameters, which combine with brush textures to generate a beautiful work of calligraphy.

The second category is calligraphy created by AI software. After activating deep learning, and analyzing a variety of famous calligraphy scripts, AI software is able to extract font information, realize image denoising, vectorization, recognition and retrieval, generate a corresponding font database, and then synthesize new fonts via algorithms.

This type of artistic creation can
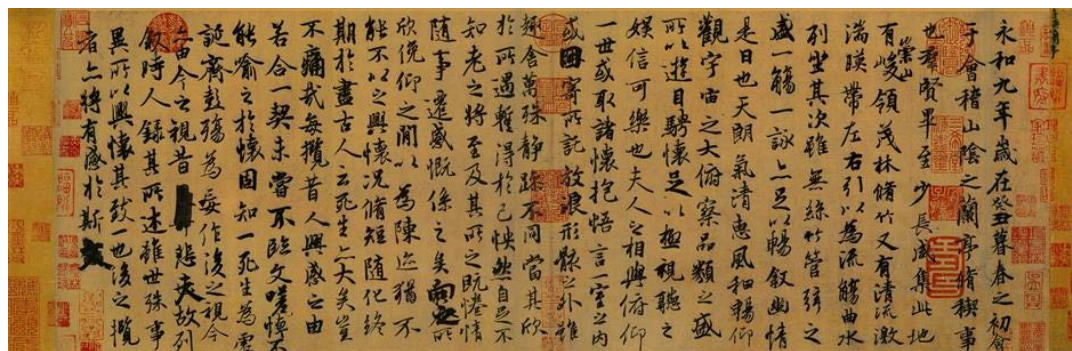
"Preface to the Poems Collected from the Orchid Pavilion" (*Lan Ting Xu*) was written by Wang Xizhi (303–361), known as the Sage of Chinese Calligraphy. Written in the Semi-Cursive style, the 324-character manuscript has been widely hailed as a timeless classic. Photo: SHINE

lead to the mass innovation of typefaces, which is much faster than the manual design. To maintain the accuracy of calligraphy imitation, brush modeling, image mosaics, skeleton rendering, style transfers and other processing procedures are applied. The calligraphy font database can also collaborate with a text library, and eventually decipher the underlying meanings of lines, so as to create and match the corresponding font.

Third, there is a form of calligraphy created by humanoid calligraphy robots. The humanoid calligraphy robot mostly uses industrial robot programming. The robot is deployed with motion sensing input devices that capture human arm trajectories, which are used to build a font database. On top of that, the robot can produce calligraphy works with a manipulator, a Chinese brush and a PC controller. Nowadays, robotic writing has achieved high similarity to human handwriting, but autonomous creativity and fine writing control still need to be improved.

In the future, calligraphy robots may be able to extract effective features of calligraphy works through fine imitation, and then generate independent font styles through deep learning and feature fusion, to realize the self-creation of calligraphy.

The first two forms of AI calligraphy are also called digital calligraphy, here, the medium of calligraphy is no longer pen and ink, but virtual electronic images.

A humanoid robot which replicates the visage of Wang Yangming of the Ming Dynasty (1368–1644) writes Chinese calligraphy at the 2016 World Robot Conference in Beijing. Photo: ECNS.CN

From the perspective of media, calligraphy can be divided into brush calligraphy, pen calligraphy, and chalk calligraphy, as well as virtual media calligraphy (such as image calligraphy and touch screen calligraphy).

In the art of calligraphy, imitation is also a creative process, regardless of whether the humanoid calligraphy robot is imitating or creating fonts, it can be considered an intelligent mimic of the artistic thinking of calligraphy. Ideally, AI calligraphy is a "demand-product" driven type of artistic production, meaning that the creation of calligraphy pieces caters to people's aesthetic needs and expectations.

In reality, AI calligraphy has been widely applied in font art design, in enterprises cultural and creative productions, robot experiments, art performances and other activities, and its "intelligence" is more like an anthropomorphic analogy. The emergence of AI calligraphy has led to a series of changes in calligraphy activities, calling for our reflection on the impact and influence of these changes on the tradition of calligraphy.

Calligraphy: Ancient to modern

Like other art forms, calligraphy has also witnessed a change from ancient to modern times and through the introduction of Western culture, which not only alters the appearance of calligraphy, but also rewrites the function and value of calligraphy. Only on the basis of understanding differences between ancient-modern and Chinese-Western cultural contexts can we delve into the subjectivity principle and value of AI calligraphy.

In traditional Chinese culture, the function of calligraphy is mainly self-cultivation and enlightenment. The attitude and process of learning are of far greater significance than the improvement of skills. What a calligraphic artist pursues is a unity between body and soul through calligraphic creation, so that he may embrace truths about the universe and life. Confucian scholars, in particular, regarded calligraphy as an expression of rites and the highest level of beauty in calligraphy as "balanced harmony"—the human mind's

ideal state when emotions such as joy, anger, sorrow, and happiness are expressed in an unbiased way, in keeping with the rites.

Therefore, the artistic subjectivity of ancient Chinese calligraphy is manifested through "ethical subjects," who often modify and enrich their own ethical orientations and spiritual pursuits through calligraphy.

In the modern era, calligraphy represents the expression of personality and freedom. Since modern China, the relationship between calligraphy and Confucianism has been disconnected. Calligraphy moved toward pure art and a specialized craft, aligning with the Western perspective. Especially in the past 40 years, a variety of calligraphy competitions and art exhibitions have prioritized the innovative spirit of calligraphy, and calligraphy has been rapidly integrated with trendy post-modern schools of arts, joining a rambunctious scene. This mentality is, however, fundamentally different from that of our ancestors.

Therefore, the artistic subjectivity of modern calligraphy is unleashed through "aesthetic subjects," who are professional artists working to meet people's aesthetic needs. Calligraphy is thus more of an artistic production.

AI calligraphy develops this modern artistic concept to the extreme. For example, if calligraphy is regarded as a pure exhibit, then the advancement of technical means becomes the evaluation criteria for artistic quality. Also, calligraphy has also become a complete commodity. AI helps calligraphy achieve efficient and large-scale production, and the commercialization demand for calligraphy gradually defines the value of calligraphy.

The significance of calligraphy is no longer related to the cultivation of character and the expression of personality, but to the pursuit of technical progress. AI becomes the creator of calligraphy, realizing the complete materialization of calligraphy. Therefore, the subjectivity of calligraphy is accomplished through "technical subjects," who uphold technology for technology's sake. The traditional significance of

calligraphy may become obsolete.

Irreplaceable traditional calligraphy

Since modern times, advancement in science and technology has extended to all aspects of society, including art, which follows a linear development in time. From brushes and hard-tipped pens, to the invention of keyboards, touch screens and other new writing tools, the evolution of writing mediums has given rise to a new type of calligraphy. As a result, AI calligraphy is given legitimacy under the scientific belief in modernity, and is regarded by some as a manifestation of artistic progress.

However, it comes with the risk of losing the traditional spirit and aesthetic pursuit. The term AI calligraphy implies that art is a problem which can be solved by science and technology, and spiritual pursuits can be calculated with algorithms.

Many would agree that art's appeal stems from the complex psychological, spiritual and emotional spaces that it reveals in an intuitive way. Different interpretations of classic paintings, works of literature, and works of art appear in different times, and these various interpretations do not exhaust the true meaning of a work of art. Even though AI can imitate calligraphy with technical perfection, it can hardly grow a soul, thus the artwork lacks spiritual significance.

Calligraphy in China is not only the art of fine handwriting, but also an integral part of Chinese culture. It has profound influence on the nation's philosophy and the common state of mind. As an old Chinese saying goes, "The way Chinese characters are written is a portrait of the person who writes them."

In ancient times, practicing calligraphy was a spiritual pursuit as well as a pleasure for Chinese scholars. For many, it still is today. There has not been a Chinese calligrapher, professional and amateur alike, who has not copied the masterpieces of Chinese calligraphy a hundred, or even a thousand times in practice. Stroke by stroke, the Chinese are not only copying the technique that their ancestors pioneered, but taking a meditative look into their classical beliefs and spiritual ideals, so as to achieve revelation and self-expression.

When AI calligraphy becomes popular as an innovative phenomenon, some people lament that calligraphers would lose their jobs. This treats calligraphy entirely as a commodity. AI will not replace calligraphy, otherwise it will fall into the paradox of artistic subjectivity. Many people in today's society are still willing to pick up the pen and ink, to enjoy the texture of brush strokes, to imitate ancient inscriptions, precisely proving that traditional calligraphy still is significant in the present.

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