Arts & Communication

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ACCSCIENCE PUBLISHING

ISSN: 2972-4090 (Online)
Volume 4 · Issue 1
March 2026

Online ISSN: 2972-4090

Arts & Communication

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Volume 4 • Issue 1 • March 2026
ISSN 2972-4090 (online)

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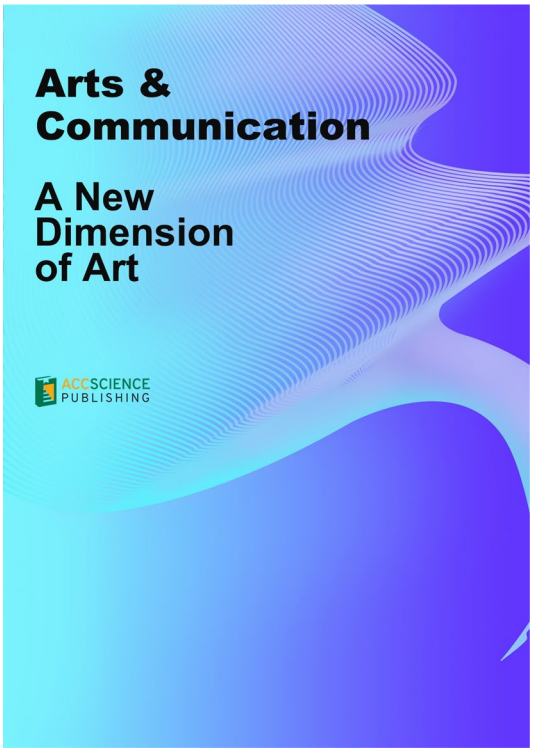
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Publisher: AccScience Publishing
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REVIEW ARTICLE

From blue to green: A review of the use and alteration of azurite pigment in cultural heritage

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Abstract

Azurite is a key blue pigment in historic art, with well-studied physical and chemical properties; however, a comprehensive synthesis that connects analytical characterization, degradation processes, and provenance studies across diverse contexts remains lacking. This review addresses this critical gap by providing an interdisciplinary synthesis of current research on azurite, a prominent blue pigment extensively used in historical artworks and cultural heritage artifacts. Based on a comprehensive survey of scholarly literature, the article consolidates findings on the pigment's physical, chemical, optical, and mineralogical properties as examined through diverse analytical techniques. Studies employing methods such as X-ray diffraction, Raman spectroscopy, and infrared (IR) spectroscopy are critically evaluated to highlight how azurite has been identified, characterized, and differentiated from related copper-based pigments. Particular emphasis is placed on the influence of particle size—categorized as coarse, medium, and fine—on optical performance and visual appearance in artworks. The review also addresses degradation phenomena, notably azurite's transformation into malachite and cupric oxide under thermal and environmental stress, with implications for pigment stability and material authenticity. Case studies, including notable examples such as the Tomb of Murongzhi, are discussed to illustrate real-world applications of these techniques in heritage science. In addition, the identification of mineral inclusions and impurities is examined in the context of geological provenance and sourcing studies. While the Tomb of Murongzhi is cited as a key example, this review considers the use and transformation of azurite across a range of cultural and geographic contexts.

Keywords: Azurite pigment; Historical colorants; Cultural heritage conservation; Pigment degradation; Analytical characterization; Mineralogical provenance

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Citation: Ali AA, Singh MR. From blue to green: A review of the use and alteration of azurite pigment in cultural heritage. *Arts & Communication*. 2026;4(1):025220048. doi: 10.36922/AC025220048

Received: May 28, 2025

Revised: July 11, 2025

Accepted: July 28, 2025

Published online: August 13, 2025

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1. Introduction

Azurite, a stunning copper carbonate hydroxide mineral, has been celebrated since antiquity for its vibrant blue hue. Its discovery in the tomb of Murongzhi, dating back to the Tang dynasty (691 AD), vividly demonstrates the prominence of valuable mineral

pigments in elite burial practices.[1] The use of azurite, often alongside malachite (a striking green pigment), highlights both the luxurious material culture and the artistic mastery of the Tuyuhun people. It also reflects their extensive connections to broader Eurasian trade and cultural networks via the Silk Road. These findings firmly establish azurite not only as a prominent pigment but also as a significant indicator of transcontinental exchange. Its widespread historical use across civilizations, including Ancient Egypt and regions of Central Asia, underscores its importance in cultural interaction.[2,3]

Azurite, with the chemical formula $Cu_3(CO_3)_2(OH)_2$, is renowned for its deep blue to violet-blue color, reminiscent of azure evening skies seen above deserts and winter landscapes.[4,5] The molecular structure of azurite, shown in Figure 1, reveals a layered arrangement of copper ions (Cu^{2+}) coordinated with carbonate and hydroxide groups, which contribute to its distinctive optical and stability characteristics. Although not widely abundant, azurite's captivating blue hue has drawn human attention for millennia. Historically, it has been utilized across various cultures not only as a copper ore but also as a pigment, gemstone, and ornamental stone—a versatility that endures to this day. This distinctive mineral, with its unique properties, remains valued for both its aesthetic appeal and practical applications.

Lucas and Harris[6] suggest that azurite may have been utilized as a paint pigment as early as Egypt's Fourth Dynasty. However, its application in Egypt and the classical world appears limited, likely due to the availability of the synthetic copper pigment Egyptian blue (copper calcium silicate). In contrast, azurite became the primary blue pigment in European art throughout the Middle Ages, the Renaissance, and beyond (Figure 2A-C), despite the greater fame of the more exotic and costly ultramarine. In 15th- and 16th-century European easel painting, natural azurite was frequently employed as an underlayer for ultramarine,

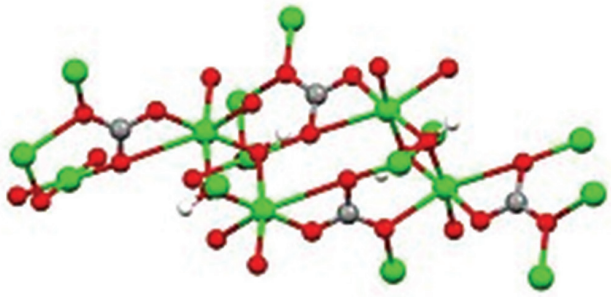


Figure 1. Chemical structure of azurite ($Cu_3(CO_3)_2(OH)_2$) adapted from standard crystallographic data. Color code: red = O, green = Cu, gray = C, white = H.
Source: RRUFF database (https://www.wikiwand.com/en/article/Copper(II)_hydroxide).

enhancing the depth and brilliance of blue hues. Giotto used azurite to render the blue robes of the apostles in his early 14th-century work *Pentecost* (1310–1318 AD). The central panel's sky in Hubert and Jan van Eyck's *Adoration of the Lamb* ("*Ghent Altarpiece*," 1425–1432 AD) was also painted with azurite, which has since aged to a greenish hue due to the pigment's chemical transformation. Piero della Francesca's *The Baptism of Christ* (after 1437 AD) features a luminous sky achieved using azurite in egg tempera, showcasing the pigment's versatility and brilliance. The pigment's rich color was especially well-suited for conveying the sanctity and significance of the figures. In *Christ Taking Leave of His Mother* (1520 AD), Albrecht Altdorfer employed azurite for both garments and the sky, demonstrating the pigment's expressive power in conveying depth and emotion. Azurite was extensively used in tempera paintings during the Middle Ages, particularly when ultramarine (derived from lapis lazuli) was unavailable or prohibitively expensive. Ultramarine was highly prized for its vivid blue hue, was sourced exclusively from Afghanistan, making it one of the most expensive pigments of the time. In contrast, azurite, found more abundantly in Europe, offered a more affordable alternative.[7] In illuminated manuscripts and panel paintings, artists frequently used azurite for blue areas, particularly underpaintings, reserving ultramarine for highlights or significant figures to emphasize divinity and importance. For instance, in a 15th-century *Book of Hours*, azurite was used as a base layer, with ultramarine applied on top to achieve a richer blue, balancing both cost and visual impact.[7] This strategic use of azurite allowed artists to manage resources effectively while still achieving the desired aesthetic, making it a staple of medieval tempera painting.

Evidence indicates that Hungary served as the principal source of azurite in Europe until the mid-17th century, when Turkish conquest disrupted its supply.[8,9] This is partially substantiated by reports identifying Hungary as a present-day source of azurite.[4,10] Other potential historical sources include Chessy, near Lyon in France, and Sardinia, both of which remain known azurite localities today. In the Far East, azurite held a prominent place as the primary blue pigment in traditional paintings. It was extensively used in wall paintings during China's Sung and Ming dynasties, particularly in Central China, and found significant application in Japanese art.[11] While azurite was traditionally employed in Japanese art, particularly during the Heian and Kamakura periods, its use in "*Ukiyo-e*" prints was largely supplanted by the introduction of Prussian blue (known in Japan as "*bero-ai*") in the early 19th century. This synthetic pigment offered a more vibrant and lightfast blue, leading to its widespread adoption in the "*Aizuri-e*" (blue printed pictures) style of "*Ukiyo-e*."[11]

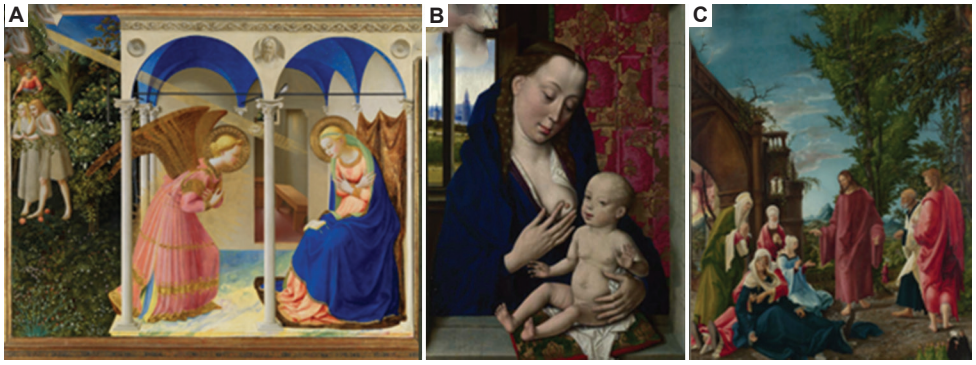


Figure 2. Examples of azurite use in European art. (A) Giotto's *Pentecost* (1310–1318 AD), fresco, Basilica of Saint Francis of Assisi, Italy. (B) *Adoration of the Lamb* by Jan and Hubert van Eyck (1432 AD), oil on panel, "*Ghent Altarpiece*," Saint Bavo's Cathedral, Belgium. (C) *The Baptism of Christ* by Piero della Francesca (after 1437 AD), egg tempera on panel, National Gallery, London. Mediums: fresco and egg tempera; dimensions vary. Images shown for educational and illustrative purposes.[8] https://www.museodelprado.es, accessed on July 28, 2025. ©Madrid, "*Museo Nacional del Prado.*"

Figure 3A and B shows Japanese paintings in which azurite was used as a colorant. In the Americas, azurite was used to a lesser extent by pre-Columbian Indigenous peoples in the Southwest and later in Spanish Mission Church paintings.[12] According to Kühn,[13] the use of natural azurite in European easel painting largely declined by around 1800 AD, with most occurrences predating the last quarter of the 17th century. The invention of Prussian blue in the early 18th century appears to have significantly displaced azurite as a favored pigment in European art.

This review aims to synthesize interdisciplinary research on azurite pigments, with a focus on their historical use, physicochemical properties, degradation mechanisms, analytical characterization, and provenance. It seeks to provide a comprehensive resource for scholars, conservators, and materials scientists engaged in the study and preservation of cultural heritage. By integrating scientific findings with case-based insights, this review offers both a foundational overview and a forward-looking perspective on azurite's role in heritage conservation.

2. Geological occurrence

Azurite, a mineral commonly found in the upper oxidized zones of copper ore deposits worldwide, serves as a natural pigment when ground into a fine powder (Figure 4). In nature, azurite is often associated with malachite ($CuCO_3 \cdot Cu(OH)_2$), a green basic copper carbonate that is even more abundant.[4,14]

Azurite is a secondary mineral typically formed when carbon-dioxide-rich waters infiltrate the earth and interact with subsurface copper ores. The carbonic acid in these waters dissolves small amounts of copper, which are then carried until the water encounters a different geochemical environment. This new environment—marked by changes in water chemistry, temperature, or evaporation—can prompt the formation of azurite. With prolonged favorable conditions, substantial accumulations of azurite can develop, as has occurred in various locations worldwide. Azurite typically precipitates within pore spaces, fractures, and cavities of subsurface rock, where it commonly forms massive or nodular deposits. In rare instances, azurite can develop as stalactites or botryoidal structures. Well-formed monoclinic crystals are less frequently encountered and only emerge when azurite precipitates freely within a fracture or cavity, undisturbed by later crystallization or geological movements. Malachite, another copper carbonate mineral, forms under conditions similar to those of azurite. These minerals frequently occur together in the same deposits and are often intergrown, creating a material known as azurmalachite. When of high quality, azurmalachite serves as an attractive material for lapidary work.

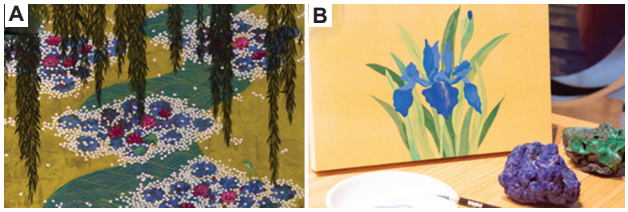


Figure 3. Use of azurite in traditional Japanese painting. (A) *Fugen Bosatsu on an Elephant*, 14th century, hanging scroll, mineral pigments on silk, Nezu Museum, Tokyo. (B) Blue landscape scene, attributed to the Edo period, ink and mineral pigments on paper. Mediums: hanging scroll and printed paper; approximate dimensions: (A) 120 × 50 cm, (B) 40 × 30 cm.[14] https://www.pinterest.com/pin, accessed on July 28, 2025. ©Madrid, "*Museo Nacional del Prado*." ©2025 Pinterest.

3. Preparation

Preparing azurite pigment involves selecting high-quality lumps, which are then ground, washed, levigated, and sieved. The pigment's color varies with particle size—coarsely ground azurite yields a deep blue, while finer

grinding results in a lighter tone. In recent times, Japanese producers have refined this process by creating three grades of azurite pigment—coarse, medium, and fine.

4. Physical properties

Azurite is best identified by its distinctive deep blue color. It is a relatively soft mineral, with a Mohs hardness of 3.5–4, and contains copper, which contributes to its blue hue. With a specific gravity of 3.7–3.9, azurite is unusually dense for a non-metallic mineral. As a carbonate, it reacts with dilute hydrochloric acid, creating mild effervescence and producing a light blue solution. When streaked on unglazed porcelain, azurite leaves a light blue mark.

Historically, preparing azurite pigment involved a multistage process to refine the mineral and enhance its chromatic qualities. The raw mineral was first broken into coarse fragments, then subjected to repeated grinding using a mortar and pestle. After grinding, the material was thoroughly washed to remove clay and lighter impurities. This was followed by levigation—a process in which suspended azurite particles were allowed to settle in water, separating coarser particles from finer ones. The levigated material was dried and sieved to produce pigments of different grades, with particle size directly influencing color intensity.[13,15] In certain traditions, the pigment was bound with animal or hide glue during preparation to improve adherence. Some recipes also recommend aging the pigment before final use to enhance tone and stability.[13,15]

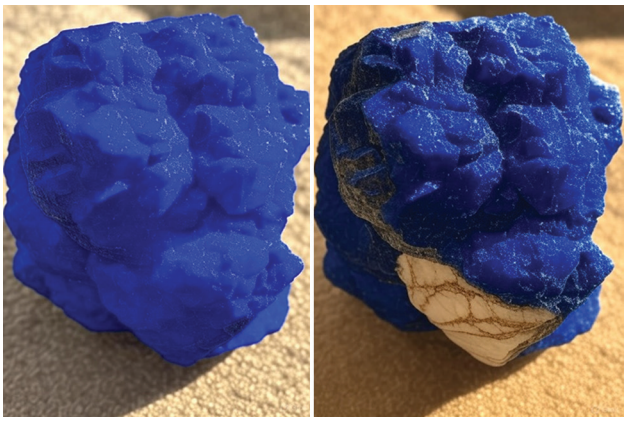


Figure 4. Azurite as a natural blue pigment sourced from copper ore deposits.[15] https://www.dakotamatrix.com, accessed on July 28, 2025. Credit to ©Dakota Matrix Minerals, Inc.,

5. Particle characteristics

Because azurite pigment is produced by grinding, its particles exhibit a broken and fractured appearance with characteristic conchoidal fractures (Figure 5A-C). These images illustrate the fracture surfaces of azurite, which are significant for both mineral identification and understanding the pigment's behavior in artworks. Without thorough sieving, particle sizes remain irregular, with larger particles often ranging from 20 to 30 μm. Due to azurite's natural association with malachite and cuprite, scattered particles of these minerals are frequently present as impurities, which can significantly impact the color of an azurite paint film. Azurite has a specific gravity of 3.77 and a Mohs hardness of 3.5–4. Particle size distributions in azurite layers from Early Netherlandish paintings were analyzed by De Boer.[16]

6. Optical properties

In transmitted light, coarse azurite particles appear deep blue, while finer particles exhibit a pale blue hue. Unlike ultramarine, which possesses a purplish undertone, azurite displays a greenish undertone. Larger azurite particles exhibit high relief and dark edges, particularly when mounted in a medium of lower refractive index, such as Canada balsam or Aroclor. Azurite is classified as a monoclinic crystal and is characterized by moderate to high refractive qualities, as well as strong birefringence. It is biaxial positive, with refractive indices of $\alpha = 1.730$, $\beta = 1.758$, and $\gamma = 1.838$.

7. Chemical properties

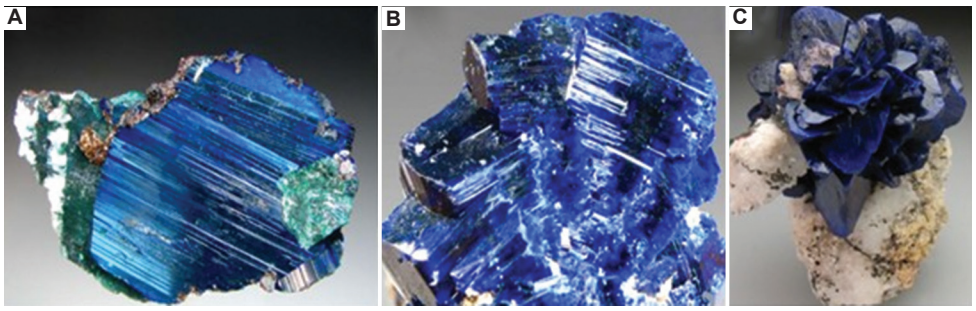


Figure 5. (A-C) Morphological characteristics of ground azurite pigment particles showing conchoidal fractures.[16] https://www.dakotamatrix.com, accessed on July 28, 2025. © 2025 Dakota Matrix Minerals, Inc.,

Azurite is stable under light and atmospheric conditions. When heated to approximately 300°C or higher, it releases water and carbon dioxide, leaving a black residue due to the formation of cupric oxide.[17] While azurite is unaffected by cold alkalis, it turns black when warmed with them. It also readily decomposes in the presence of dilute mineral acids, producing carbon dioxide gas. However, when azurite particles are embedded in an organic medium or present in small quantities, they may dissolve without a noticeable release of gas.

Azurite is a monoclinic copper carbonate hydroxide, with a deep blue hue resulting from Cu^{2+} ion d–d transitions. It has a Mohs hardness of 3.5–4, a specific gravity of ~3.7–3.9, perfect cleavage on [011], and a vitreous to dull luster. The mineral is transparent to translucent and commonly forms tabular or prismatic crystals. These properties, including its tendency to alter to malachite under humid or acidic conditions, are well documented in the mineralogical literature.[18,19]

7.1. Permanence

Although azurite is a carbonate and thus sensitive to acids, it demonstrates considerable permanence when used in oil and tempera media. Azurite may transform into malachite, cupric oxide, or paratacamite, depending on humidity, heat, and exposure to alkaline or sulfurous environments (Figure 6).

However, it tends to darken when exposed to sulfur fumes, particularly in mural paintings.[20] Azurite can also turn green over time due to alteration into malachite, as observed in Cimabue's frescoes on the ceiling of the Upper Church of St. Francis in Assisi.[21] In rare cases, azurite may transform into the basic copper chloride mineral paratacamite ($Cu_2(OH)_3Cl$) under specific environmental conditions.[9] The pigment remains unaffected by light.

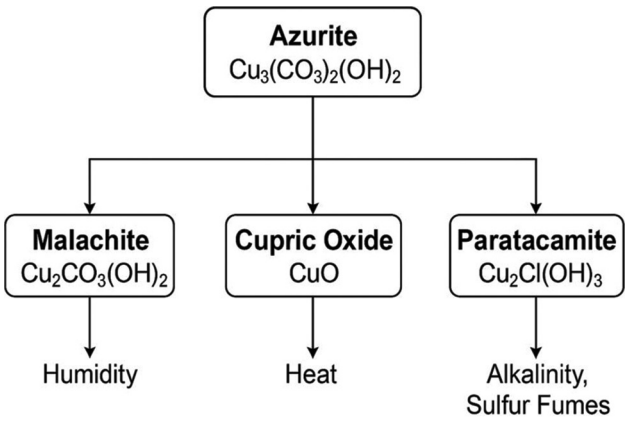


Figure 6. Schematic representation of azurite degradation pathways under environmental stress. Image created by the authors.

According to Selim Augusti,[21] nearly every medieval Italian church containing azurite mural paintings shows signs of transformation into malachite. Similar transformations have also been reported in mural paintings in Romania.[22,23]

In many oil-based easel paintings, thick layers of azurite have developed a greenish or very dark, almost black appearance, particularly when the pigment is used alone without mixing with others.[5] A notable example of this discoloration is found in *St. Margaret* (no. 1930) by Zurbarán, specifically in the saint's blue cloak, at the National Gallery in London.[24] The exact cause of this color change remains unclear, and transformation into malachite does not appear to be the primary explanation. It may partly result from darkening of the oil medium in thick, coarse-textured paint layers, despite the known siccative and antioxidant effects of copper pigments on oil films. Another possible cause is the formation of a thin surface layer of black cupric oxide (tenorite) on azurite particles through various hypothesized mechanisms. Recent studies have confirmed the conversion of azurite to cupric oxide in alkaline environments, such as those found on excavated polychrome sculpture.[25] In addition, thickly applied azurite paint is often prone to wrinkling and fissuring, although the pigment itself may remain well-preserved beneath the surface.

8. Historical use of azurite pigment

The use of azurite as a blue pigment spans millennia and continents. From Egyptian faience and Chinese tomb murals to medieval European manuscripts and Renaissance panel paintings, azurite has been one of the most prized minerals for its intense hue and relative abundance. Its application methods and aesthetic effects varied by region, reflecting distinct cultural preferences and technological approaches. Azurite was widely used as a pigment in China but is rarely found in Indian paintings. Nonetheless, it is likely that azurite occurs naturally alongside copper ores in India, raising the question of whether it could have been collected for producing natural azurite pigment. A synthetic version, known as blue verditer, has also been produced, though it lacks the durability of the natural mineral.[26] Azurite was ground into a pigment for blue paint as early as ancient Egypt,[15] and its use expanded significantly over time. By the Middle Ages and Renaissance, it had become the most important blue pigment in Europe. Much of the azurite used during this period was sourced from mines in France.

Producing pigment from azurite was an expensive process in the Middle Ages, as mining was challenging, transportation was slow, and grinding and processing required significant effort.[27] Starting in the 18th century, azurite pigment was gradually replaced by synthetic

alternatives like Prussian blue and blue verditer. These man-made pigments offered standardized, uniform properties, making them more predictable and consistent in application, as well as more economical to produce. Numerous medieval paintings created before the introduction of Prussian blue show signs of blue pigment deterioration.[28] Over time, and with exposure to light and atmospheric conditions, azurite gradually weathers into green malachite. This transformation is a key reason synthetic pigments have replaced azurite. Although azurite pigment and paints remain available today, they are primarily used by artists interested in historical painting techniques.[29]

9. Characterization

In a comprehensive scientific analysis of artifacts excavated from the tomb of Murongzhi, situated along the historic Silk Road in China, azurite emerged as a prominent mineral pigment utilized in decorative artwork. This study employed advanced multi-analytical techniques, including Raman spectroscopy and X-ray diffraction (XRD), to accurately determine the composition and authenticity of the pigments found on murals, pottery, lacquered wood, and textiles.[1]

X-ray diffraction is an ideal tool for identifying and confirming the presence of azurite ($Cu_3(CO_3)_2(OH)_2$) in pigment samples. XRD analysis is based on the unique diffraction patterns produced when X-rays interact with the azurite crystal lattice, allowing for precise mineral identification. Pigment samples are finely ground to ensure homogeneous, fine-grained particles. Care is taken to avoid environmental contamination or transformations, particularly conditions that could lead to azurite's conversion into malachite or cupric oxide. Azurite's monoclinic crystal structure produces a characteristic XRD pattern with distinctive peaks that serve as "fingerprints" for the mineral. The XRD data provided strong support for the identification of azurite from the Tomb of Murongzhi. Notable diffraction peaks were detected at 2θ values of 17.5, 17.58, 24.72, 34.26, 40.66, and 49.26, which align well with the crystalline structure characteristic of azurite (Figure 7). These findings confirm that azurite is a prominent component in the surface layer of blue-painted artifacts from the site, highlighting its cultural and analytical significance.[1] By comparing the sample's XRD pattern with reference patterns from databases such as the International Centre for Diffraction Data or the Inorganic Crystal Structure Database, azurite can be accurately identified and distinguished from other copper-based carbonates such as malachite ($Cu_2CO_3(OH)_2$). Malachite has an orthorhombic structure and produces a distinct set of XRD peaks, allowing researchers to identify and quantify

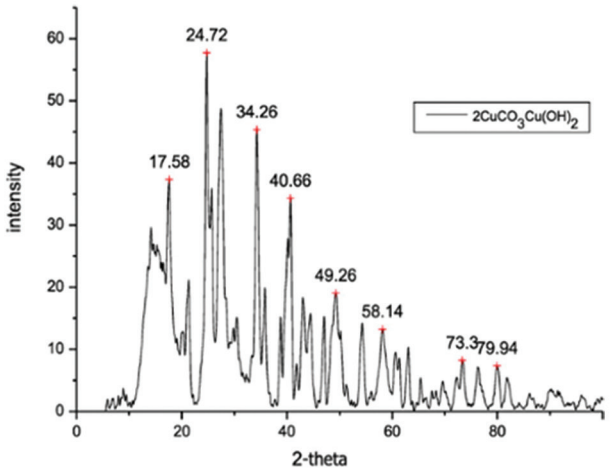


Figure 7. X-ray diffraction pattern of azurite showing characteristic crystalline peaks. Reprinted with permission from Wei *et al.*[1] Copyright © 2023, American Chemical Society.

each mineral phase. XRD can also assess the purity of azurite by detecting additional phases such as malachite or cupric oxide that may have formed as alteration products. This analysis helps identify samples that have undergone weathering or degradation over time, as azurite gradually converts to malachite under environmental exposure. The presence of cupric oxide peaks may also indicate exposure to heat or alkaline conditions. Such data are crucial for developing conservation strategies and understanding the original materials used by artists across different historical and cultural contexts.

Brown *et al.*[30] explored the thermal decomposition of azurite using *in situ* X-ray thermodiffraction techniques, tracking the pigment's phase transitions and analyzing the effects of heating up to 220°C, which can lead to the formation of tenorite (CuO). This research is significant for understanding azurite's stability in conservation efforts, particularly under various environmental conditions. Hiley *et al.*[31] demonstrated a high-resolution, non-invasive XRD approach suitable for azurite and other historical pigments. Their study shows the application of XRD in detailed phase analysis and crystallographic data acquisition for cultural heritage pigments. Frost *et al.*[32] examined azurite's thermal decomposition stages and the transformation to malachite under specific conditions. Their study provides insight into azurite's structural changes over time, which can help in understanding its alteration in art and archeological artifacts exposed to natural aging.

Raman spectroscopy is a powerful tool for characterizing azurite, a copper carbonate hydroxide mineral widely used as a pigment in historical artwork. Raman spectroscopy offers several advantages for analyzing azurite, including

its non-destructive nature, the ability to detect subtle structural and compositional differences, and its capability to work *in situ* on artifacts and paintings without causing damage. Azurite exhibits distinctive Raman peaks, typically observed around 400–1,600 cm^{-1}. These peaks correspond to the vibrational modes of the carbonate and hydroxide groups in the crystal structure. The primary Raman bands for azurite include those associated with the symmetric stretching and bending modes of the carbon trioxide (CO_3) groups, as well as bands corresponding to the Cu-O and Cu-OH bonds.[32,33] These peaks allow for reliable identification of azurite and differentiation from other blue pigments such as ultramarine or synthetic blue pigments.

Raman spectroscopy is particularly useful in conservation science because it can detect transformation products, such as malachite, which sometimes forms due to azurite's gradual weathering or alteration under environmental conditions. This is relevant for preserving historical artifacts, as Raman analysis can track the degradation processes that occur in azurite-containing artworks over time. Studies have noted that exposure to light, humidity, and air pollutants can induce azurite's gradual conversion to malachite, identifiable through changes in the Raman spectra. Moreover, Raman microscopy, combined with XRD and other analytical methods, enhances the understanding of azurite's composition and stability within complex paint layers.

Aru *et al.*[34] conducted Raman microscopy analysis on 19 natural azurite specimens sourced from historically significant mining regions across Europe and beyond. Their findings revealed a consistent pattern of mineral impurities, with hematite (α-Fe_2O_3) being the most prevalent impurity, identified in 14 of the samples. Noteworthy specimens included BM 59247 from Moldova, BM 91434 from Oravicza, Krasso (Hungary), and BM 91438 from Falkenstein, Schwaz, Tyrol (Austria). Goethite (α-FeO(OH)) was identified in 13 samples, including BM 91440 from Moldova, Krasso (Hungary), BM 91432 from Zellerfeld, Harz (Germany), and BM 1964 R7046 from Gwennap, Cornwall (United Kingdom). Malachite ($CuCO_3 \cdot Cu(OH)_2$), another prevalent impurity, was present in 11 samples, including BM 91436 from Falkenstein (Austria), BM 1955.214 from Garrigill, Cumberland (United Kingdom), and BM 91442 from Chessy, Lyon (France). Cuprite (Cu_2O) was found in seven samples, such as BM 91440 (Hungary), BM 59258B from Barnaul, Tomsk (Siberia), and BM 91444 from Molina de Aragón, New Castile (Spain).

Less common impurities included anatase and rutile (TiO_2), quartz (SiO_2), calcite ($CaCO_3$), cerussite ($PbCO_3$), cinnabar (HgS), rhodochrosite ($MnCO_3$), and amorphous carbon, many of which are associated with host rock matrices or environmental contamination. Rare minerals such as jarosite and beudantite were found in only two samples each but may serve as provenance markers if consistently detected in future studies. Contrary to earlier assumptions, tenorite (CuO) was not detected, and many of the orange–brown and black inclusions were identified as goethite or hematite rather than copper oxides. These findings suggest that the impurity phases commonly observed in museum azurite pigments are a result of natural geological processes rather than artistic manipulation.[34] The Raman spectra of blue pigments from the Tomb of Murongzhi clearly revealed distinctive peaks at 248, 398, 767, and 831 cm^{-1} (Figure 8). These peaks align perfectly with the established spectral signatures of azurite ($Cu_3(OH)_2(CO_3)_2$), definitively confirming its presence as a blue pigment in the analyzed samples.[1]

In the Tomb of Murongzhi, azurite was identified as a primary blue pigment used in mural fragments from the Tang dynasty. Micro-Raman spectroscopy confirmed the presence of $Cu_3(CO_3)_2(OH)_2$ with strong peaks near 400, 765, and 1090 cm^{-1}, consistent with crystalline azurite. Scanning electron microscopy (SEM)–energy-dispersive X-ray spectroscopy analysis showed copper-rich layers interbedded with mineral accretions, suggesting environmental influence on pigment stratigraphy. Fourier transform infrared spectroscopy (FTIR) also supported azurite's presence, with characteristic carbonate absorption (Figure 9). This case highlights the pigment's application in elite funerary art and its relatively intact preservation after more than a millennium.[1]

IR spectroscopy analysis of azurite provides insight into its molecular structure, particularly focusing on the carbonate groups and hydroxyl vibrations within the

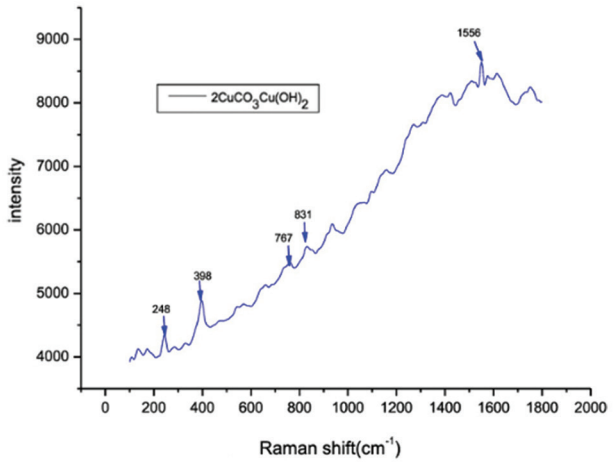


Figure 8. Raman spectra of azurite pigments from the Tomb of Murongzhi showing characteristic vibrational bands. Reprinted with permission from Wei *et al.*[1] Copyright © 2023, American Chemical Society.

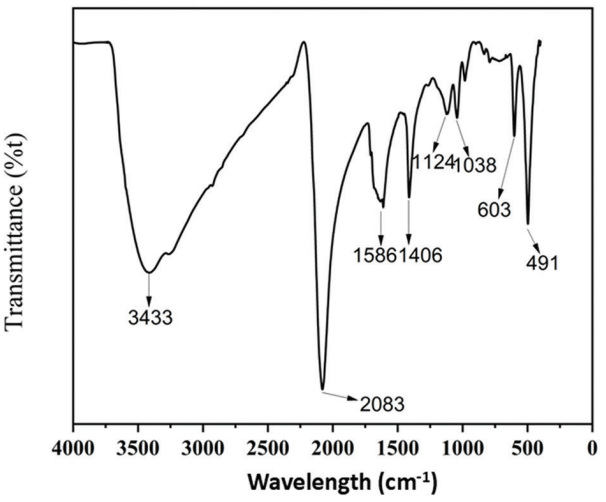


Figure 9. Fourier transform infrared spectroscopy spectrum of azurite ($Cu_3(CO_3)_2(OH)_2$), showing characteristic absorption bands near 1,406 cm^{-1} (CO_3^{2-} stretching), 1,038 cm^{-1} (bending), and 3,433 cm^{-1} (OH^-). Image created by the authors.

mineral. Key absorption bands appear in the range of 1,350–1,650 cm^{-1} for the carbonate stretching modes, while OH bending modes are generally observed around 3,400–3,500 cm^{-1}. These IR spectra help distinguish azurite from other copper carbonates, such as malachite, due to their unique band patterns, which are valuable for verifying the mineral's presence in artworks, geological samples, or conservation projects.[35]

In recent years, hyperspectral imaging techniques, especially in the short-wave IR (up to 2,500 nm), have been used to map azurite and its alteration products non-invasively. For instance, reflectance features at approximately 2,285 and 2,350 nm help in identifying azurite across paintings and heritage objects.[36] Electrochemical methods such as cyclic voltammetry and impedance spectroscopy have also demonstrated potential for *in situ* monitoring of copper carbonate pigments, offering new insight into redox behavior and degradation pathways.

10. Provenance studies and mineral impurity profiling

Recent advancements in mineral impurity profiling have enhanced the ability to trace the geological origins of azurite pigments. By combining Raman spectroscopy, XRD, and elemental mapping, researchers have begun to differentiate azurite samples from key historical mining sites based on unique combinations of mineral inclusions such as hematite, goethite, malachite, and quartz. For example, Aru *et al.*[34] successfully classified azurite specimens from regions such as Chessy (France), Harz (Germany), and Cornwall (United Kingdom) by analyzing impurity patterns and crystal morphology. These findings offer potential for provenance determination in artworks and painted surfaces, allowing scholars to reconstruct pigment trade routes and workshop practices. Although still an emerging field, such studies demonstrate how analytical mineralogy can contribute meaningfully to cultural heritage investigations.

11. Discussion

The findings synthesized in this review illustrate how azurite, while visually compelling and historically widespread, presents unique challenges for conservation due to its chemical instability and complex provenance. Integrating art historical contexts with multi-analytical studies reveals broader patterns in pigment sourcing, workshop practices, and long-term material behavior. These insights bridge heritage science, analytical chemistry, and cultural history, reaffirming azurite's value as both a scientific subject and cultural marker.

The literature on azurite as a historical pigment reveals the evolution of its use, significance, and scientific investigation. Across cultures and time periods, azurite was selected not only for its vibrant hue but also for its accessibility and ease of preparation, particularly in contrast to the rarer and more expensive ultramarine. However, differences in pigment processing methods—ranging from simple hand grinding to complex levigation—have resulted in varying particle morphologies and optical properties, affecting both visual aesthetics and analytical interpretations. A critical comparison of spectroscopic studies demonstrates that while azurite can be reliably identified through Raman and FTIR spectroscopy, overlapping signals with associated minerals like malachite or cerussite often complicate interpretation. This highlights the need for multi-analytical protocols to distinguish natural alteration products from intentional pigment mixtures, especially in complex polychrome surfaces.

The reviewed studies further show that azurite is particularly sensitive to environmental conditions such as humidity, temperature, and pH fluctuations. Its known conversion to malachite or basic copper oxides under such stressors raises important concerns for the long-term stability of azurite-containing artworks, especially those on exposed architectural surfaces or in poorly controlled museum environments. The degradation of azurite under acidic, humid, or thermal stress typically follows these reactions:

(i) Formation of malachite (under moist carbon dioxide [CO_2]-rich conditions):
$Cu_3(CO_3)_2(OH)_2$ (azurite) + CO_2 + H_2O → $3CuCO_3{\cdot}Cu(OH)_2$ (malachite)

(ii) Formation of copper oxide (under high temperature

or oxidative conditions):
$Cu_3(CO_3)_2(OH)_2$ (azurite) → 3CuO (tenorite) + $2CO_2$ + H_2O

These reactions are central to the pigment's long-term instability and guide the development of conservation strategies for azurite-containing artifacts. Yet, the specific mechanisms and thresholds of these transformations remain incompletely understood, suggesting a promising avenue for future experimental work. Furthermore, the geographical sourcing of azurite based on trace impurities or mineral inclusions has opened new pathways for provenance studies, although this remains an underexplored field requiring a more robust mineralogical database. Finally, the role of azurite in non-Western traditions, especially in East Asia, merits greater scholarly attention to enrich the global narrative of pigment use and evolution.

Despite the substantial research on azurite's mineralogy and degradation, key gaps remain. There is a need for integrated long-term monitoring of azurite-containing artworks under real environmental conditions, as well as broader use of high-resolution imaging and isotope analysis in provenance studies. Future investigations should also explore historical pigment recipes and workshop techniques that may influence azurite's performance. Such interdisciplinary approaches will not only refine conservation strategies but also deepen understanding of artistic materials and trade networks in historical contexts.

12. Conclusion

This review consolidates current knowledge on azurite, a historically significant blue pigment widely used across cultures and time periods in mural paintings, manuscripts, and polychrome sculptures. Drawing from a wide range of analytical studies, this work underscores azurite's distinct mineralogical identity, variable particle morphology, and unique optical behavior, which are closely tied to its preparation techniques and intended artistic effects. Through methods such as XRD, Raman spectroscopy, FTIR, and SEM, past studies have illuminated the pigment's structural integrity, chemical composition, and sensitivity to environmental stressors. The degradation of azurite into malachite or other copper-based products, especially under humid, alkaline, or thermally unstable conditions, emerges as a critical concern for conservators. These transformations not only alter the visual character of artworks but also compromise the pigment's stability and authenticity. Furthermore, the presence of mineralogical impurities and associated phases offers valuable clues to geological sourcing and historical trade routes, enriching our understanding of pigment provenance and workshop practices. The review emphasizes the importance of non-destructive, multi-analytical approaches in the study of azurite to support both scholarly research and conservation planning. As cultural heritage professionals strive to balance preservation with public display and environmental exposure, the insights gained from these characterizations become indispensable. Future research should focus on the long-term monitoring of azurite-based artifacts, the development of conservation strategies tailored to its vulnerabilities, and the exploration of historical recipes that may influence its behavior.

Acknowledgments

The authors would like to acknowledge the support provided by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, and Tezpur University, Assam.

Funding

None.

Conflict of interest

The authors declare that they have no competing interests.

Author contributions

Conceptualization: All authors
Visualization: All authors
Writing–original draft: All authors
Writing–review & editing: All authors

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

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Arts & Communication

REVIEW ARTICLE

Artful Internet of Things in mathematics teacher education: A systematic review

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(This article belongs to the *Special Issue: Mathematics Meets the Arts: Implications for teacher education*)

Abstract

The rapid expansion of digital technologies has transformed educational landscapes, compelling educators to rethink how emerging tools can cultivate deeper learning, creativity, and innovation. Within this shift, the Internet of Things (IoT) has emerged as a transformative force, connecting physical and digital environments to enable interactive, data-driven, and learner-centered experiences. In mathematics education, IoT technologies invite new forms of exploration that blend computational thinking with artistic expression—an intersection increasingly recognized as vital for developing 21st-century teaching competencies and advancing the goals of sustainable and creative education. This systematic review explores how the IoT is being integrated into mathematics teacher education through the lens of artful thinking and creativity. Building on technological, sociocultural, and esthetic learning frameworks, the review critically synthesizes research published between 2015 and 2025. Findings revealed that IoT not only serves as a technological innovation but also as an artistic medium to foster imaginative, design-based mathematical practices among preservice and in-service teachers. Benefits identified include enhanced mathematical modeling, spatial reasoning, and interdisciplinary inquiry, while challenges include technological resistance, limited creative assessment models, and infrastructural inequalities. The review also emphasizes the potential of artfully connected IoT practices to advance Sustainable Development Goals 4 and 9. Recommendations are provided for future research, teacher education practices, and policy reforms aimed at embedding esthetic and technological creativity in mathematics instruction.

Keywords: Internet of Things; Mathematics teacher education; Artful thinking; Creative pedagogy; Smart classrooms; Sustainable education

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Citation: Meylani R. Artful Internet of Things in mathematics teacher education: A systematic review. *Arts & Communication*. 2026;4(1):025190036. doi: 10.36922/AC025190036

Received: May 6, 2025

Revised: September 30, 2025

Accepted: October 15, 2025

Published online: October 29, 2025

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1. Introduction

1.1. Background and rationale

The Internet of Things (IoT) has increasingly permeated various sectors, profoundly reshaping practices and processes, including those in education, particularly within mathematics learning environments. By facilitating real-time data collection and enabling dynamic visualizations of abstract mathematical concepts, IoT extends

traditional educational boundaries and supports the adoption of innovative pedagogical approaches. Its integration into educational contexts not only improves technical efficiencies but also fosters interactive learning experiences that promote deeper engagement with mathematical content. However, it is important to recognize that many existing applications of IoT in education have predominantly emphasized operational efficiency, often at the expense of creativity, imagination, and interdisciplinary connections.[1-3]

As mathematics education evolves to meet the complex demands of the 21st century, it becomes imperative to integrate artistic and creative dimensions into technological applications.[2,4,5] The framework of artful thinking provides a critical pathway for enhancing this integration, encouraging both educators and learners to perceive mathematics not solely as a logical and procedural field but also as one rich with esthetic perspectives and design-based inquiry opportunities.[4,6,7] This multidimensional approach necessitates creating educational environments where students are invited to navigate both technical and creative domains, thus cultivating well-rounded competencies essential for future educators.[8-10]

1.2. Gap analysis

Despite the considerable potential of IoT technologies in educational contexts, a substantial gap persists in the literature concerning their use to foster creative engagement within mathematics teacher education. Most studies have concentrated on the technical affordances of IoT, such as improving classroom management and enhancing analytical capabilities, while giving limited attention to its role in cultivating creative mathematical thinking and esthetic appreciation.[11-13] Furthermore, the intersection between IoT applications and creative pedagogical processes in mathematics education remains largely unexplored, with few systematic reviews addressing how these elements might be coherently integrated into teacher training programs.[14-16]

The lack of comprehensive investigations framing IoT within creative educational practices impedes the ability of educators to design programs that simultaneously develop technological proficiency and creative fluency among prospective mathematics teachers.[16-18] Without such integration, instructional strategies risk remaining narrowly technical, rather than evolving into curricula that address the multifaceted challenges of modern education and adequately prepare students for complex learning environments.[6,7,19] Addressing these deficiencies requires the development of pedagogical frameworks that elevate creativity alongside mathematical rigor, potentially transforming teacher education and enhancing student learning outcomes.[5,20]

The urgency of pursuing mathematical creativity and innovative educational practices is reinforced by findings from multiple studies that advocate for pedagogical paradigms emphasizing creative problem-solving.[1,12,21] These methodologies not only deepen cognitive engagement but also promote the kind of transformative pedagogical shifts increasingly necessary in mathematics education. Nevertheless, realizing this potential demands that educational institutions embrace curricula fostering creativity through interdisciplinary approaches and real-world problem-solving experiences.[22-24] Therefore, a deliberate and concerted integration of creative pedagogical strategies within the technological frameworks provided through IoT is warranted to prepare a new generation of mathematics educators capable of delivering innovative, engaging, and contextually relevant learning experiences in an increasingly digitalized world.[3,25-27]

1.3. Research questions

In light of the gaps identified, this systematic review seeks to address the following research questions:

- How is the IoT currently integrated into mathematics teacher education to foster both technical and creative competencies?
- In what ways does IoT support the development of artful thinking, imaginative reasoning, and esthetic engagement in mathematics teacher preparation programs?
- What pedagogical opportunities and challenges arise from the intersection of IoT, art, and mathematics education?

2. Data and methods

2.1. Data sources and search strategy

A comprehensive and systematic literature search was conducted to identify peer-reviewed studies focusing on the integration of IoT, artful thinking, and mathematics teacher education. The following databases were searched: Education Resources Information Center (ERIC), Scopus, Web of Science, IEEE Xplore, Education Source, and ArtsEdSearch. These databases were selected to ensure comprehensive coverage across education, technology, engineering, and arts-related research fields.

The search strategy employed Boolean operators, controlled vocabulary where applicable, and combinations of free-text terms. Key terms included: ("Internet of Things" OR "IoT") AND ("mathematics education" OR "math teacher education") AND ("art*" OR "creativ*" OR "design thinking" OR "esthetic*" OR "artful thinking"). Search strings were adapted to meet the specific indexing syntax of each database. Filters were applied to limit the

search to English-language studies published between January 01, 2015, and March 31, 2025.

In addition to database searching, a manual search of relevant conference proceedings, professional organization websites, and the reference lists of included studies was conducted to identify additional eligible studies that may not have been captured through the primary search. This supplementary search ensured that gray literature and emerging interdisciplinary research at the intersection of IoT, mathematics, and artful education were considered.

2.2. Inclusion and exclusion criteria

Strict inclusion and exclusion criteria were established to guide the selection process systematically. The inclusion criteria included:

- Peer-reviewed journal articles, conference papers, or significant organizational reports
- Studies involving preservice or in-service mathematics teachers
- Studies explicitly addressing the use of IoT technologies in mathematics education
- Studies incorporating elements of creativity, artistic expression, design thinking, or artful thinking in the context of IoT applications
- Studies reporting empirical research (quantitative, qualitative, or mixed methods) or comprehensive conceptual frameworks.

The exclusion criteria included:

- Studies focusing exclusively on technical or administrative applications of IoT without educational or artistic dimensions
- Studies not specifically related to mathematics education (e.g., general science, technology, engineering, and mathematics [STEM] education without a distinct focus on mathematics)
- Theoretical papers without empirical evidence, unless presenting a comprehensive, innovative framework linking IoT, art, and mathematics education
- Non-peer-reviewed sources, such as blog posts, non-academic magazines, editorials, and opinion pieces
- Publications not available in full-text or published in languages other than English without verified translations.

A two-stage screening process was implemented: first at the title and abstract level, and subsequently through full-text evaluation. Studies were included if they met all inclusion criteria after full-text assessment.

2.3. PRISMA selection process

A total of 986 records were initially identified through database searches, with an additional 18 records retrieved through manual searches and reference lists, resulting in 1004 records overall. After the removal of duplicates, 820 records remained and were subjected to title and abstract screening. Of these, 698 records were excluded based on irrelevance to the research focus. Subsequently, 122 full-text articles were assessed for eligibility. During this stage, 45 articles were excluded for specific reasons: 19 articles did not integrate creativity or artful thinking, 13 were unrelated to mathematics teacher education, 8 demonstrated insufficient methodological quality, and 5 did not address IoT or relevant technologies. Ultimately, 77 studies met all inclusion criteria and were incorporated into the qualitative synthesis for the systematic review (Figure 1).

2.4. Data extraction and synthesis

Data extraction was guided by a structured protocol to ensure consistency and replicability. For each eligible study, the following information was systematically recorded:

- Author(s) and year of publication
- Country and educational context (preservice or in-service teacher education)
- Research aims and questions
- Study design and methodology (qualitative, quantitative, or mixed methods)
- Characteristics of participants (e.g., sample size and demographics)
- Description of IoT tools and technologies employed
- Description of artistic, creative, or design-based pedagogies integrated
- Main findings related to creativity, artful thinking, mathematical learning, and technological use
- Reported challenges, barriers, and limitations

The extracted data were then synthesized using a thematic analysis approach. Themes were identified inductively through iterative reading and coding of the extracted material. Attention was paid to patterns, convergences, divergences, and unique contributions across the included studies. Narrative synthesis was prioritized to maintain the richness of qualitative insights, while quantitative results were summarized descriptively when reported.

No meta-analysis was performed, as the heterogeneity of study designs, contexts, and outcome measures precluded meaningful statistical aggregation.

2.5. Quality appraisal

The methodological quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT), which evaluates qualitative, quantitative, and mixed-methods research. The appraisal considered the appropriateness of research questions, suitability of study

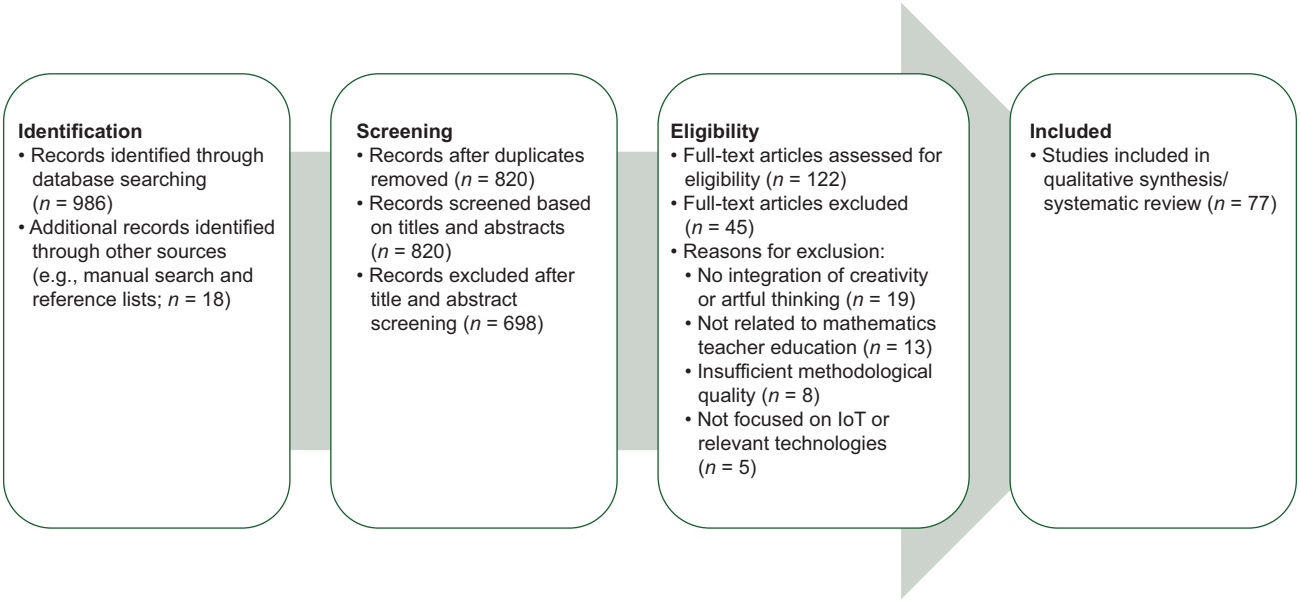


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram
Abbreviation: IoT: Internet of Things.

design, rigor of data collection and analysis, and clarity of reporting. Additional attention was given to the integration of creativity, esthetic dimensions, and interdisciplinary approaches, reflecting the thematic focus of this review.

To ensure reliability, the screening process was conducted in two stages, repeated at different time points, and coding decisions were cross-checked. Agreement rates reached a Cohen's kappa of 0.84, indicating strong consistency across rounds. Studies that failed to meet acceptable standards of methodological rigor, thematic alignment, or clarity were excluded at the full-text eligibility stage.

By combining MMAT criteria with supplementary considerations, such as reporting clarity and explicit connections to mathematics teacher education, this multi-criteria approach ensured that only studies with sufficient rigor and relevance were included in the final synthesis.

3. Results

Across the 77 unique references analyzed (Table 1 and Figure 2), the themes of pedagogical benefits of IoT integration and applications of IoT for creative mathematical practices emerged as the most substantial, comprising 24.04% and 22.40% of the total citations, respectively.

Although themes related to innovation and sustainability (15.30%) and artful conceptualizations (16.39%) were also notably represented, the significant presence of research on challenges and barriers (21.86%) reflects the field's ongoing struggle to balance innovation with practical and ethical considerations. This distribution suggests that while creative integration of IoT into mathematics teacher education is a growing area of scholarly focus, there remains a strong parallel concern with infrastructure, ethics, and pedagogical readiness.

3.1. Artful conceptualizations of IoT in mathematics teacher education

This theme (Figure 3 and Table 2) accounted for 30 citations, representing 16.39% of the total references. Within this theme, IoT as a medium for creative and esthetic engagement was supported by 8 references (4.37%), while multisensory learning experiences through IoT and reframing mathematics as an interdisciplinary, artful endeavor were each represented by 11 references (6.01% each). These findings suggest that while interest in creativity and interdisciplinarity in IoT-enhanced mathematics education is growing, it still occupies a moderate proportion of the overall scholarly landscape.

3.1.1. IoT as a medium for creative and esthetic engagement

The IoT serves as a versatile medium that transcends technical functionalities, transforming mathematics education into a domain enriched with creativity and esthetic appreciation. Contemporary educational frameworks increasingly recognize IoT as a catalyst for imaginative exploration, enabling preservice teachers to engage with mathematics not solely as a logical construct but also as a field intertwined with artistic

Table 1. Classification of 77 reviewed studies by thematic focus and sub-thematic contributions

Main theme	Sub-theme	*n*	Percentage
Artful conceptualizations of IoT in mathematics teacher education	IoT as a medium for creative and esthetic engagement	8	4.37
	Multisensory learning experiences through IoT	11	6.01
	Reframing mathematics as an interdisciplinary, artful endeavor	11	6.01
	Subtotal	30	16.39
Applications of IoT to foster creative mathematical practices	Sensor-driven art installations illustrating mathematical concepts	8	4.37
	Wearable IoT technologies modeling dynamic mathematical relationships	9	4.92
	Arduino and Raspberry Pi projects connecting art, coding, and mathematics	10	5.46
	IoT-based real-world data collection for artistic interpretation	14	7.65
	Subtotal	41	22.40
Innovative and sustainable practices	Environmental data visualizations promoting ecological awareness	8	4.37
	Smart art installations addressing social and environmental themes	11	6.01
	Contributions to Sustainable Development Goals (SDG 4 and SDG 9)	9	4.92
	Subtotal	28	15.30
Pedagogical benefits of artfully integrated IoT	Strengthening mathematical modeling and visualization skills	10	5.46
	Development of design thinking and interdisciplinary problem-solving	11	6.01
	Enhancing engagement and affective connection to mathematics	11	6.01
	Fostering future-ready teaching competencies	12	6.56
	Subtotal	44	24.04
Challenges and barriers	Limited access to IoT infrastructure and technical expertise	8	4.37
	Resistance to open-ended and nontraditional pedagogies	11	6.01
	Difficulty assessing artistic and creative outcomes	10	5.46
	Ethical issues related to privacy, ownership, and data use	11	6.01
	Subtotal	40	21.86
Grand total		183	100.00

Abbreviation: IoT: Internet of Things.

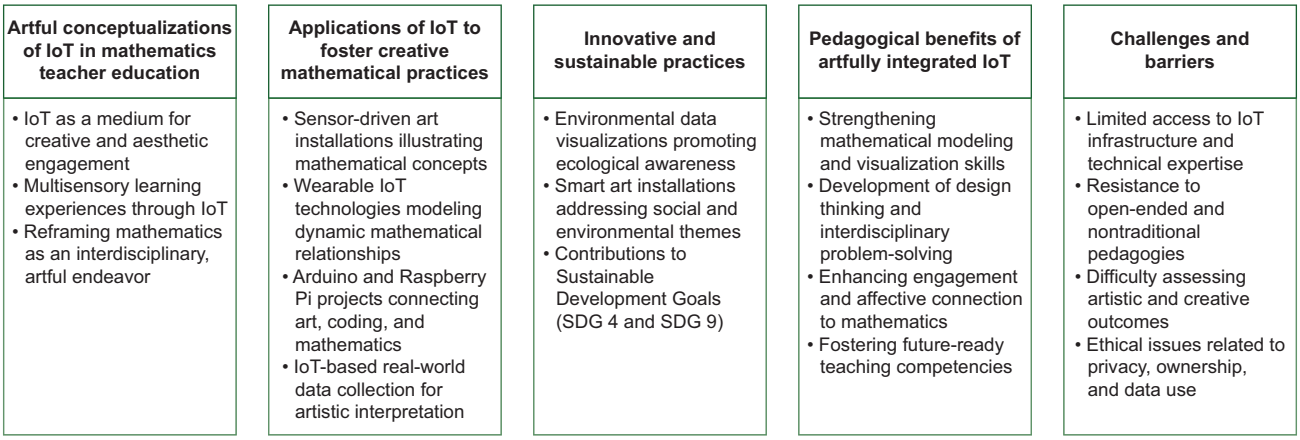


Figure 2. Main themes and subthemes emerging from the thematic synthesis
Abbreviation: IoT: Internet of Things.

expression and human creativity.[11,30,34] Research suggests that when educators incorporate IoT technologies, they foster environments conducive to the synthesis of artistic and mathematical ideas, thereby bridging the gap between abstract mathematical concepts and tangible creative expressions.[28,32] This integration not only

Table 2. The citations, along with their frequency and percentage, for the theme and its sub-themes

Main theme	Sub-theme	Citations	*n*	Percentage
Artful conceptualizations of IoT in mathematics teacher education	IoT as a medium for creative and esthetic engagement	Dhayanti *et al.*;[28] Haavold *et al.*;[29] Hamimi *et al.*;[30] Ismiati;[31] Itqan and Arrahmani;[32] Khalid *et al.*;[11] Simamora and Ramadhanta;[33] Soomro *et al.*[34]	8	4.37
	Multisensory learning experiences through IoT	Bampasidis *et al.*;[35] Chamberlin *et al.*;[36] Hamid and Kamarudin;[37] Hamimi *et al.*;[30] Hoth *et al.*;[38] Kuchkarova; [39] Mamatnabiyev *et al.*;[40] Mamazhanovich; [41] Mariani *et al.*;[42] Nilimaa;[43] Suwastika *et al.*[44]	11	6.01
	Reframing mathematics as an interdisciplinary, artful endeavor	Berikzhanovna;[45] Biçer;[46] Bishara;[47] Firmender *et al.*;[48] Hamid and Kamarudin;[37] Juliantara *et al.*;[49] Kozlowski and Si; [50] Lee and Heo;[51] Paneva-Marinova *et al.*;[52] Samritin *et al.*;[53] Xayrullayevna[54]	11	6.01

Abbreviation: IoT: Internet of Things.

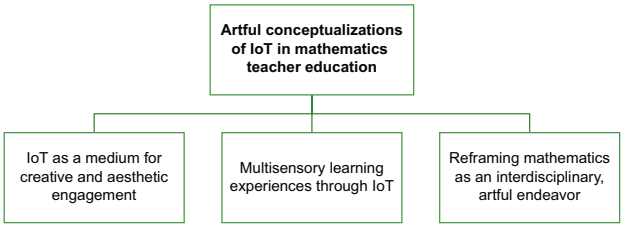


Figure 3. Visual depiction of the theme
Abbreviation: IoT: Internet of Things.

enriches mathematical understanding but also prepares preservice teachers to adopt interdisciplinary pedagogical approaches.[29]

Positioning IoT as a medium for creative engagement aligns with modern educational aspirations to nurture esthetic sensitivity among preservice teachers. Through varied modalities—including visual arts, performance, and physical installations—students can experiment and express mathematical ideas creatively, thus reimagining mathematics within broader cultural and societal contexts.[29,31,33] Strategic integration of IoT technology invites educators to expand pedagogical boundaries, promoting innovative teaching approaches that resonate with the creativity inherent in both art and mathematics.[33]

3.1.2. Multisensory learning experiences through IoT

Studies have consistently demonstrated the capacity of IoT technologies to facilitate multisensory learning experiences by combining visual, auditory, and tactile stimuli to enhance comprehension of mathematical constructs.[30,36,40] By employing IoT devices, educators can deliver interactive lessons that engage preservice teachers through diverse sensory modalities. For instance, environmental sensors can record real-time data such as sound levels, temperature changes, and motion, providing dynamic contexts for mathematical exploration.[37,42]

Multisensory engagement deepens cognitive connections among learners, supporting a richer internalization of complex mathematical ideas.[35,38,41] Activating multiple senses stimulates curiosity and innovation while fostering holistic comprehension of mathematical theories. Integrating sensory-rich pedagogical strategies, therefore, supports the development of both foundational mathematical competencies and creative exploration within teacher education programs.[39,43,44]

3.1.3. Reframing mathematics as an interdisciplinary, artful endeavor

The integration of IoT technologies reframes mathematics as an interdisciplinary field, emphasizing its connections to art, design, culture, and human expression.[50,52,54] Through IoT tools, preservice teachers can explore how mathematical modeling underpins artistic creations such as digital art, installations, and kinetic sculptures.[37,53] This interdisciplinary engagement fosters intellectual flexibility and enriches preservice teachers' understanding of mathematics as a dynamic, culturally embedded practice.[47]

Incorporating broader societal and artistic contexts into mathematical education helps dismantle perceptions of mathematics as isolated and rigid.[49,51] Consequently, preservice teachers are better equipped to design innovative, technology-enhanced learning experiences that emphasize adaptability and multidimensional inquiry.[45,46,48]

3.2. Applications of IoT to foster creative mathematical practices

A total of 41 references (22.40%) contributed to this theme (Figure 4 and Table 3). Among the sub-themes, IoT-based real-world data collection for artistic interpretation was the most prominent, with 14 citations (7.65%), highlighting the growing emphasis on real-world, data-driven creative learning. Arduino and Raspberry Pi projects were discussed in 10 studies (5.46%), followed by Wearable IoT technologies with 9 citations (4.92%) and Sensor-driven art installations with 8 citations (4.37%). The relatively high representation of this theme reflects a strong scholarly

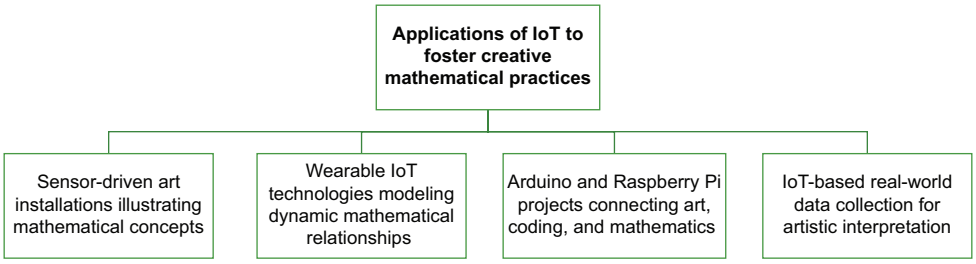


Figure 4. Visual depiction of the theme
Abbreviation: IoT: Internet of Things.

Table 3. The citations, along with their frequency and percentage, for the theme and its sub-themes

Main theme	Sub-theme	Citations	*n*	Percentage
Applications of IoT to foster creative mathematical practices	Sensor-driven art installations illustrating mathematical concepts	Berikzhanovna;[45] Akar;[55] Itqan and Arrahmani;[32] Kozlowski and Si;[50] Poudel;[56] Samritin *et al*.;[53] Simamora and Ramadhanta;[33] Wahyuni *et al*.[57]	8	4.37
	Wearable IoT technologies modeling dynamic mathematical relationships	Applebaum; [58,59] Arnellis *et al*.;[60] Bampasidis *et al*.;[35] Bardhan;[61] Itqan and Arrahmani;[32] Laili and Istikomah;[62] Suwastika *et al*.;[44] Vasconcelos;[63] Yaftian[64]	9	4.92
	Arduino and Raspberry Pi projects connecting art, coding, and mathematics	Bruhn and Lüken; [65] Connolly *et al*.;[66] Hoth *et al*.;[38]Jalil and Siew; [67] Kuchkarova; [39] Metu *et al*.;[68] Qian and Cheng;[69] Simamora and Ramadhanta;[33] Supandi *et al*.;[70] Šimon and Gogolák[71]	10	5.46
	IoT-based real-world data collection for artistic interpretation	Bampasidis *et al*.;[35] Bezerra *et al*.;[72] Dhayanti *et al*.;[28] Huệ *et al*.;[73] Jorge *et al*.;[74] Juliantara *et al*.;[49] Kelechi and Nnaji;[75] Kuchkarova;[39] Laili and Istikomah;[62] Makuseva *et al*.;[76] Mariani *et al*.;[42] Monahan *et al*.;[77] Qizi;[78] Unterfrauner *et al*.[79]	14	7.65

Abbreviation: IoT: Internet of Things.

interest in practical and artistic applications of IoT in mathematics education.

3.2.1. Sensor-driven art installations illustrating mathematical concepts

Sensor-driven art installations utilizing IoT technologies represent an innovative method for visualizing core mathematical principles. Through such initiatives, preservice teachers can physically manipulate and engage with concepts such as geometric transformations, data patterns, and spatial reasoning, linking abstract mathematics to tangible artistic outputs.[32,53] These installations offer dynamic platforms where mathematical ideas become living, interactive experiences, fostering deeper understanding while simultaneously stimulating creative expression.[45,55]

Engaging in these projects encourages preservice teachers to collaborate, think critically, and design esthetically compelling yet mathematically sound artifacts.[50,56] The interdisciplinary nature of sensor-driven projects underscores the importance of fostering connections between mathematics, creativity, and technology.[33,57] By incorporating such experiences into mathematics teacher education, programs can cultivate richer learning environments that build both technical and artistic competencies.

3.2.2. Wearable IoT technologies modeling dynamic mathematical relationships

Wearable IoT technologies provide another powerful avenue for modeling dynamic mathematical phenomena, such as rates of change, symmetry, and motion. These applications allow preservice teachers to experience mathematics firsthand, gathering and interpreting real-time data to uncover underlying principles and relationships.[32,61,63] Engaging with wearable devices transforms learning into an active exploration, moving beyond passive theoretical instruction toward experiential discovery.[35,64]

This hands-on approach promotes the development of critical thinking, data literacy, and problem-solving skills, empowering future educators to create dynamic classroom environments that encourage active participation.[44,58,59,62] Integrating wearable IoT technologies thus nurtures teaching practices that align with contemporary educational demands for innovation, engagement, and applied learning.[60]

3.2.3. Arduino and Raspberry Pi projects connecting art, coding, and mathematics

Low-cost IoT platforms, such as Arduino and Raspberry Pi, facilitate hands-on projects that bridge art, coding,

and mathematics. Through these technologies, preservice teachers construct artistic representations of mathematical concepts, developing computational thinking alongside creative expression.[33,70] Such projects encourage participants to integrate programming skills with mathematical reasoning, resulting in multifaceted, interdisciplinary learning experiences.[38,68]

Moreover, these initiatives promote collaboration, experimentation, and iterative problem-solving, vital components of innovative educational practices.[66,69] By blending artistic creation with technological skills, preservice teachers cultivate a growth mindset and foster a willingness to explore the exploratory nature of mathematics.[39,67,71] The creative use of Arduino and Raspberry Pi thus transforms mathematics education into an engaging, multidimensional endeavor.[65]

3.2.4. IoT-based real-world data collection for artistic interpretation

Projects utilizing IoT devices for real-world data collection enable preservice teachers to engage in authentic mathematical inquiries anchored in empirical realities. Through environmental sensors and data-gathering tools, students collect information that can be analyzed, interpreted, and visualized artistically.[35,73,77] This process fosters interdisciplinary learning by linking mathematics, science, and art through creative interpretations of data.[72,74,79]

Engagement with empirical data promotes the perception of mathematics as an integral part of daily life, enhancing students' problem-solving strategies and esthetic sensibilities.[42,62] Real-world data-driven artistic projects motivate learners by allowing them to creatively address societal issues through mathematical inquiry.[39,49,75] Integrating IoT into mathematics education thus fosters innovation, real-world relevance, and interdisciplinary competencies.[28,76,78]

3.3. Innovative and sustainable practices

This theme (Figure 5 and Table 4) included 28 citations (15.30%). Smart art installations addressing social and environmental themes led with 11 references (6.01%), demonstrating a significant intersection between mathematical creativity and broader social issues. Environmental data visualizations promoting ecological awareness and Contributions to Sustainable Development Goals (SDG 4 and SDG 9) were represented by 8 (4.37%) and 9 (4.92%) references, respectively. These results emphasize the increasing integration of sustainability and global citizenship within mathematics education discourse.

3.3.1. Environmental data visualizations promoting ecological awareness

Projects that utilize IoT technologies to collect and visualize environmental data offer significant opportunities to link sustainability education with mathematics learning. By engaging preservice teachers in collecting real-world data on factors such as air quality, temperature changes, and resource consumption, educational programs deepen learners' understanding of mathematical applications while simultaneously fostering ecological awareness.[32,69] These visualizations not only provide esthetic representations of environmental phenomena but also serve as powerful educational tools that underscore the societal relevance of mathematics.[39,61]

Integrating ecological data collection into mathematics education encourages preservice teachers to view sustainability not as a peripheral topic but as an essential, embedded component of their instructional practices.[11,57] Project-based learning modules that involve artistic

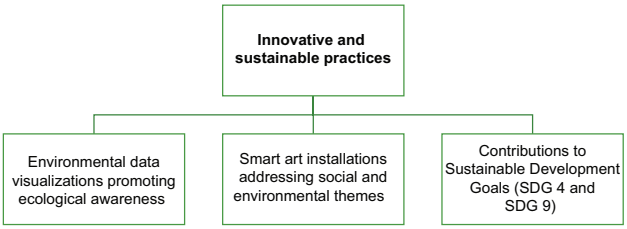


Figure 5. Visual depiction of the theme
Abbreviation: IoT: Internet of Things.

Table 4. The citations, along with their frequency and percentage, for the theme and its sub-themes

Main theme	Sub-theme	Citations	*n*	Percentage
Innovative and sustainable practices	Environmental data visualizations promoting ecological awareness	Bardhan;[61] Hamid and Kamarudin;[37] Itqan and Arrahmani;[32] Khalid *et al.*;[11] Kuchkarova;[39] Paneva-Marinova *et al.*;[52] Qian and Cheng; [69] Wahyuni *et al.*[57]	8	4.37
	Smart art installations addressing social and environmental themes	Chamberlin *et al.*;[36] Chacón *et al.*;[80] Haavold *et al.*;[29] Jalil and Siew; [67] Juliantara *et al.*;[49] Kuchkarova;[39] Poudel;[56] Simamora and Ramadhanta;[33] Šimon and Gogolák;[71] Suyitno;[81] Wadaani[5]	11	6.01
	Contributions to Sustainable Development Goals (SDG 4 and SDG 9)	Anita;[82] Arnellis *et al.*;[60] Hamid and Kamarudin;[37] Hamimi *et al.*;[30] Ismiati;[31] Itqan and Arrahmani;[32] Khalid *et al.*;[11] Kozlowski and Si;[50] Suwastika *et al.*[44]	9	4.92

Abbreviation: IoT: Internet of Things.

interpretations of environmental data can further inspire a sense of ethical stewardship and community engagement among future educators.[37,52] By situating mathematics within the broader context of environmental responsibility, teacher education programs contribute to the development of educators who are committed to fostering sustainable practices.

3.3.2. Smart art installations addressing social and environmental themes

Preservice teachers increasingly utilize IoT technologies to create smart art installations that address pressing social and environmental issues, demonstrating the potential of mathematics education to serve as a catalyst for societal change.[5,33,56] These projects integrate mathematical inquiry with critical ethical, social, and environmental considerations, illustrating the discipline's capacity to engage with broader human concerns.[29,67]

By developing installations that provoke dialogue among peers and community members, preservice teachers model ways in which mathematics and creativity can inspire civic engagement and activism.[39,49,81] These experiences cultivate a sense of agency among future educators, empowering them to design learning experiences that are not only academically rigorous but also socially relevant and transformative.[36,71,80]

3.3.3. Contributions to SDG 4 and SDG 9

The creative integration of IoT technologies within mathematics teacher education aligns directly with key SDGs, particularly SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure).[11,32,37] By embedding technological and artistic creativity into instructional methodologies, teacher education programs cultivate future educators who are equipped to drive innovation and promote educational equity on a global scale.

Research emphasizes that the integration of arts and technology within mathematics fosters higher levels of engagement, critical thinking, and interdisciplinary competence, all of which are necessary to achieve sustainable educational outcomes.[30,44,60] By embracing these opportunities, preservice teachers can contribute meaningfully to the advancement of inclusive, high-quality education while fostering the innovation needed to address future societal challenges.[31,50,82]

Consequently, mathematics teacher education that incorporates IoT and creative practices not only prepares educators for contemporary classrooms but also empowers them to actively participate in the global movement toward achieving the SDGs.

3.4. Pedagogical benefits of artfully integrated IoT

This theme, which focused on pedagogical impacts (Figure 6 and Table 5), comprised the largest share of the literature (44 citations; 24.04%). Fostering future-ready teaching competencies was the most frequently cited sub-theme with 12 references (6.56%). Both development of design thinking and interdisciplinary problem-solving and enhancing engagement and affective connection to mathematics had 11 citations each (6.01%), while strengthening mathematical modeling and visualization skills was represented by 10 citations (5.46%). This dominant presence underscores the field's recognition of IoT and creative practices as transformative tools for enhancing teacher competencies.

3.4.1. Strengthening mathematical modeling and visualization skills

Engaging preservice teachers with artfully integrated IoT projects significantly enhances their abilities to model, visualize, and represent mathematical ideas in innovative and tangible ways.[48,78,84] These experiences encourage future educators to explore mathematics through multiple artistic and technological lenses, thus strengthening critical instructional competencies. Through hands-on exploration, preservice teachers acquire practical strategies for translating complex mathematical concepts into accessible and engaging formats for diverse learners.[83]

The emphasis on visualization nurtures a deeper conceptual understanding, equipping preservice teachers with skills necessary for effective mathematical communication in classroom settings.[11,61,63] This proficiency in visualization not only supports preservice teachers' professional growth but also prepares them to foster similar abilities among their students, promoting a cycle of creative, inquiry-driven mathematical learning.[43,57,65]

3.4.2. Development of design thinking and interdisciplinary problem-solving

The creative demands associated with artfully integrating IoT technologies cultivate essential skills in design thinking, interdisciplinary collaboration, and solution-focused inquiry.[45,46,64] By engaging with innovative projects, preservice teachers are required to generate, test, and refine ideas while integrating diverse disciplinary perspectives, mirroring real-world problem-solving scenarios. This design-oriented mindset fosters adaptive thinking and creativity, vital attributes for contemporary educators.[63,81,87]

Exposure to interdisciplinary approaches expands preservice teachers' pedagogical toolkits, enabling them to construct rich, multifaceted learning experiences that transcend traditional subject boundaries.[44,86] As future educators encounter complex, open-ended challenges,

Table 5. The citations, along with their frequency and percentage, for the theme and its sub-themes

Main theme	Sub-theme	Citations	*n*	Percentage
Pedagogical benefits of artfully integrated IoT	Strengthening mathematical modeling and visualization skills	Bardhan;[61] Bruhn and Lüken;[65] Firmender *et al.*;[48] Khalid *et al.*;[11] Munaji *et al.*;[83] Nadiroh;[84] Nilimaa;[43] Qizi;[78] Vasconcelos;[63] Wahyuni *et al.*[57]	10	5.46
	Development of design thinking and interdisciplinary problem-solving	Berikzhanovna;[45] Annet;[85] Bampasidis *et al.*;[35] Biçer;[46] Pasaribu *et al.*;[86] Sekinaeva;[87] Suwastika *et al.*;[44] Suyitno;[81] Vasconcelos;[63] Yaftian;[64] Zuhri[88]	11	6.01
	Enhancing engagement and affective connection to mathematics	Berikzhanovna;[45] Arnellis *et al.*;[60] Haavold *et al.*;[29] Hamid and Kamarudin; [37] Metu *et al.*;[68] Milner-Bolotin and Zazkis;[89] Pasaribu *et al.*;[86] Samaniego *et al.*;[90] Seftiana *et al.*;[91] Sekinaeva;[87] Yang[92]	11	6.01
	Fostering future-ready teaching competencies	Applebaum;[58,59] Bampasidis *et al.*;[35] Haavold *et al.*;[29] Hoth *et al.*;[38] Kozlowski and Si;[50] Kuchkarova; [39] Laili and Istikomah;[62] Mariani *et al.*;[42] Qian and Cheng;[69] Saraç and Özdener;[93] Sekinaeva;[87] Stylianidou *et al.*[94]	12	6.56

Abbreviation: IoT: Internet of Things.

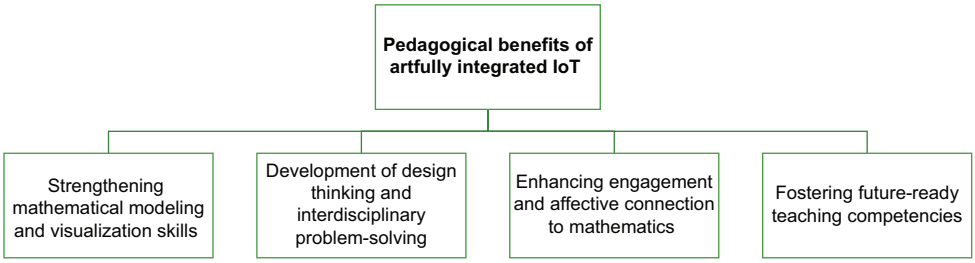


Figure 6. Visual depiction of the theme
Abbreviation: IoT: Internet of Things.

they develop resilience and flexibility, attributes that are increasingly demanded in today's evolving educational environments.[35,85,88]

3.4.3. Enhancing engagement and affective connection to mathematics

Participation in IoT-based artistic projects has been shown to enhance preservice teachers' engagement, enjoyment, and emotional connection to mathematics.[37,68,89] These affective benefits are critical, as they reframe mathematics from a static body of knowledge into a dynamic, expressive, and personally meaningful discipline. By fostering environments that emphasize creativity, educators can demystify mathematics and increase its accessibility to a broader range of learners.[86,87,90]

Strengthening students' emotional connection to mathematics also promotes persistence, resilience, and creative risk-taking—qualities that are essential for success in complex problem-solving contexts.[29,92] Furthermore, engaging in artistic exploration builds self-efficacy among preservice teachers, encouraging them to adopt creativity as a core component of their pedagogical identity.[45,60,91]

3.4.4. Fostering future-ready teaching competencies

Creative IoT activities play a pivotal role in preparing preservice teachers for future instructional environments that prioritize innovation, multimodal learning, and technological fluency.[50,87,94] Engagement with IoT-driven projects cultivates adaptability, equipping future educators to meet the growing demands for creative and flexible teaching practices.[29,39,42]

Developing a nuanced understanding of how technology can support creative teaching and learning processes positions preservice teachers to enrich their students' educational experiences meaningfully.[35,62,69] As mathematics education evolves to embrace digital tools and interdisciplinary approaches, preservice teachers trained through IoT integration will be better prepared to contribute to sustainable, student-centered educational reforms.[38,58,59,93]

3.5. Challenges and barriers

Finally, 40 citations (21.86%) addressed challenges and barriers (Figure 7 and Table 6). Resistance to open-ended and nontraditional pedagogies and ethical issues related to privacy, ownership, and data use each appeared in 11 studies (6.01%), illustrating ongoing tensions surrounding educational innovation. Difficulty assessing artistic and creative outcomes was discussed in 10 studies (5.46%), and limited access to IoT infrastructure and technical expertise was highlighted in 8 references (4.37%). The substantial attention to challenges signals a critical need for systematic support and policy development to facilitate the adoption of creative IoT-based pedagogies.

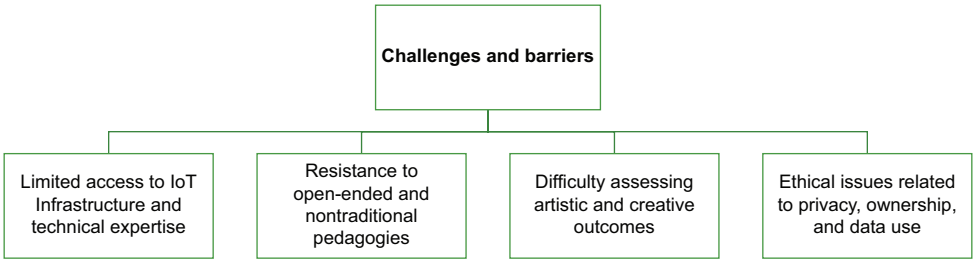


Figure 7. Visual depiction of the theme
Abbreviation: IoT: Internet of Things.

Table 6. The citations, along with their frequency and percentage, for the theme and its sub-themes

Main theme	Sub-theme	Citations	*n*	Percentage
Challenges and barriers	Limited access to IoT infrastructure and technical expertise	Biçer;[46] Hamimi *et al*.;[30] Mamazhanovich;[41] Monahan *et al*.;[77] Pasaribu *et al*.;[86] Saraç and Özdener; [93] Utami *et al*.;[95] Wahyuni *et al.* [57]	8	4.37
	Resistance to open-ended and nontraditional pedagogies	Akar;[55] Applebaum;[58,59] Biçer;[46] Chamberlin *et al*.;[36] Chacón *et al*.;[80] Lee and Heo;[51] Mamazhanovich;[41] Pasaribu *et al*.;[86] Saraç and Özdener;[93] Sekinaeva;[87] Supandi *et al*.[70]	11	6.01
	Difficulty assessing artistic and creative outcomes	Akar;[55] Gorev *et al*.;[96] Juliantara *et al*.;[49] Maro *et al*.;[97] Monahan *et al*.;[77] Poudel;[56] Setiyawan *et al*.;[98] Utami *et al*.;[95] Winarko;[99] Yaftian[64]	10	5.46
	Ethical issues related to privacy, ownership, and data use	Biçer;[46] Daskolia *et al*.;[100] Mamazhanovich;[41] Maro *et al*.;[97] Monahan *et al*.;[77] Sakabe *et al*.;[101] Suwastika *et al*.;[44] Syutaridho *et al*.;[102] Vasconcelos;[63] Yaftian;[64] Šimon and Gogolák[71]	11	6.01

Abbreviation: IoT: Internet of Things.

3.5.1. Limited access to IoT infrastructure and technical expertise

One of the foremost challenges in integrating IoT technologies into mathematics teacher education is the unequal access to necessary infrastructure and technical expertise.[41,57,86] Variations in the availability of IoT devices, technical support, and professional development opportunities across educational institutions impact the consistency and quality of implementation. Limited resources hinder preservice teachers' exposure to creative and innovative uses of IoT technologies.[77,95]

In addition, insufficient technical know-how among educators often poses a barrier to the successful adoption of IoT initiatives. Concerns about rapidly evolving technological requirements and the need for continuous professional development further exacerbate this challenge. To address these limitations, teacher education programs must prioritize investment in IoT infrastructure and provide ongoing training to ensure that preservice teachers can confidently and competently integrate IoT into their instructional practices.[30,46,93]

3.5.2. Resistance to open-ended and nontraditional pedagogies

Despite the growing emphasis on creativity and innovation, resistance to open-ended and nontraditional pedagogical approaches persists among both faculty members and students.[36,41,51] Deep-rooted preferences for traditional, procedural methods of mathematics instruction often result in skepticism or reluctance toward exploratory, IoT-enhanced, and art-integrated pedagogies. This resistance can hinder the adoption of more creative instructional practices and stifle innovation within teacher preparation programs.[46,58,59,86]

Promoting cultural change within educational institutions is essential for fostering acceptance of progressive teaching approaches that combine rigor with creativity. Integrating discussions of pedagogical diversity, interdisciplinary collaboration, and the value of creativity into preservice curricula can help mitigate resistance and prepare future educators to embrace holistic and adaptive teaching strategies.[55,70,80,87,93]

3.5.3. Difficulty assessing artistic and creative outcomes

Conventional assessment frameworks used in mathematics education often prove inadequate for evaluating artistic and creative outcomes emerging from IoT-based projects.[55,77,95,99] Traditional grading systems, focused predominantly on accuracy and procedural proficiency, are ill-suited to capture the multifaceted and process-oriented nature of creative learning experiences. As a result, educators may

struggle to fairly and effectively assess student growth and achievement in projects that emphasize innovation, artistic expression, and interdisciplinary inquiry.[56,64]

To address this challenge, educational programs must develop and implement innovative assessment models that value creativity, collaboration, and problem-solving as integral components of mathematical learning.[49,97,98] Holistic assessment frameworks that recognize the complexity and depth of creative mathematical work will better support the aims of integrated IoT education and encourage sustained engagement with artistic mathematical practices.[96]

3.5.4. Ethical issues related to privacy, ownership, and data use

The implementation of IoT technologies in educational contexts also raises critical ethical concerns related to data privacy, intellectual property rights, and the responsible use of student-generated content.[77,97,102] IoT devices often collect and transmit sensitive information, making it imperative to establish clear policies that protect the rights and privacy of all participants involved in creative educational projects.[63,100,101]

Institutions must proactively develop guidelines that address ownership of artistic creations, consent for data use, and ethical considerations surrounding the collection and dissemination of information.[41,44] Moreover, teacher education programs should embed discussions on ethics into their curricula to equip preservice teachers with the critical awareness needed to navigate these challenges responsibly.[46,64,71] Cultivating ethical literacy will empower future educators to integrate IoT technologies thoughtfully and respectfully, upholding the dignity and rights of all learners.

4. Discussion

4.1. Synthesis of findings across studies

4.1.1. IoT as a bridge between technology, art, and mathematics education

The synthesis of findings across multiple studies indicates that the IoT serves as a compelling bridge connecting technological innovation, artistic creativity, and mathematical reasoning. Rather than functioning merely as a technical enhancement, IoT enables the creation of learning experiences where mathematics is expressed, interpreted, and understood through various artistic media.[103] This integration allows students to visualize and manipulate abstract mathematical concepts, fostering environments where technology and art intertwine seamlessly with mathematics education.[104]

Collectively, the findings highlight the transformative potential of such integrative approaches, suggesting that when mathematics is infused with creative and artistic elements, it significantly enhances student engagement and deepens understanding.[105] Furthermore, IoT technologies facilitate dynamic, multisensory interactions between students and mathematical ideas, fostering stronger cognitive and emotional connections to the discipline.[106] This transition reflects a broader pedagogical shift, emphasizing the importance of integrating technology with artistic practices to create richer and more inclusive learning environments.[107]

4.1.2. Artful thinking as a catalyst for reimagining mathematics teacher preparation

The incorporation of artful thinking frameworks challenges traditional models of mathematics teacher preparation by emphasizing the creative, imaginative, and interdisciplinary dimensions of education.[108] Research demonstrates that preservice teachers trained within artful thinking frameworks are better equipped to design student-centered environments that foster critical thinking, exploration, and creativity.[109]

This paradigm shift encourages viewing mathematics as a narrative shaped by inquiry and artistic interpretation rather than rigid procedural mastery.[110] Integrating artful thinking also fosters an appreciation of the interconnectedness of disciplines, positioning mathematics within broader cultural and societal contexts.[111] Consequently, this approach enriches the learning process by embedding creativity and esthetic engagement as essential components of mathematics education.[112]

4.1.3. Expanding affective and esthetic dimensions of mathematics learning

Artful IoT practices contribute to a more holistic vision of mathematics education by valuing emotional, imaginative, and experiential dimensions alongside cognitive skills.[113] Research indicates that preservice teachers exposed to multisensory, esthetic experiences exhibit higher engagement and motivation levels.[114] These experiences help learners develop deeper emotional connections to mathematics, enabling them to appreciate the discipline's broader cultural and societal significance.[115]

Moreover, multisensory engagement fosters a classroom climate where exploration and creativity are integral to the learning process.[116] Through these approaches, mathematics education can move beyond computations and algorithms, revealing the inherent beauty and artistry within the discipline.[117]

4.2. Theoretical implications

Theoretical perspectives on IoT integration in mathematics teacher education highlight the need to expand traditional pedagogical frameworks to embrace creativity, sociocultural mediation, and sustainability. Extending established models such as Technological Pedagogical Content Knowledge (TPACK), grounding practices in sociocultural theory, and embedding innovation and responsible citizenship within mathematics education offer new pathways for transformative teaching. Together, these approaches position preservice teachers to navigate complex educational landscapes while fostering critical, creative, and socially responsive learning environments.

4.2.1. Extending TPACK through creative and esthetic competencies

Findings suggest that established models, such as the TPACK framework, should be expanded to incorporate creative and esthetic competencies as fundamental dimensions.[118] Research shows that the intersection of creativity, technology, and pedagogy is vital for cultivating effective teaching practices in contemporary classrooms.[119] Future models must recognize how IoT and artful thinking reshape pedagogical strategies, enabling educators to integrate creative inquiry effectively.[120] This broader conceptualization will enhance mathematics teacher education and benefit cross-disciplinary educational innovation.

4.2.2. Sociocultural mediation of technological and artistic experiences

Grounded in sociocultural theory, the use of IoT as an artistic and communicative mediator broadens the role of cultural tools in learning.[121] Integrating artful IoT practices demonstrates how digital technologies mediate meaning-making processes across disciplines, facilitating deeper cultural and contextual understandings.[122] Teacher education must therefore prepare preservice teachers to navigate diverse learning landscapes where sociocultural and technological mediations intersect meaningfully.

4.2.3. Mathematics education within a sustainability and innovation paradigm

Embedding sustainability-oriented artful projects using IoT technologies calls for a reconceptualization of mathematics education within global frameworks emphasizing innovation and responsible citizenship.[123] Mathematics education has a vital role in fostering the critical thinking and interdisciplinary collaboration needed to address global challenges.[124] Preparing preservice teachers to integrate sustainability themes into mathematics education is essential for cultivating engaged citizens capable of shaping a more equitable future.[125]

4.3. Practical implications for mathematics teacher education

The integration of artful IoT projects into preservice mathematics teacher education represents a critical step toward fostering creativity, innovation, and technological fluency among future educators. To fully realize this potential, institutions must not only embed such projects into their curricula but also provide the necessary infrastructure, sustained professional development, and interdisciplinary collaboration opportunities. Together, these strategies create a foundation for preparing teachers who can navigate and shape dynamic, interconnected, and future-ready learning environments. Details of strategies are as follows:

- Embedding artful IoT projects into preservice curricula: Mathematics teacher education programs should deliberately embed artful IoT projects into their curricula, promoting design thinking, creative inquiry, and technological literacy.[126] Such initiatives offer preservice teachers opportunities to engage with real-world problems, thereby enhancing professional preparation.[127]
- Providing infrastructure and professional development for artful IoT integration: Institutions must invest in IoT infrastructure and offer comprehensive professional development programs that address both technical skills and creative pedagogies.[128-130] Sustained support structures are essential for fostering the confidence and competence necessary for innovative teaching practices.[131]
- Encouraging interdisciplinary collaboration and innovation: Mathematics education should embrace interdisciplinary models by facilitating collaboration across education, engineering, fine arts, and sustainability disciplines.[132] Such collaborations enhance preservice teachers' abilities to design dynamic, interconnected learning environments.[133]

4.4. Recommendations for stakeholders

The findings of this review point to several actionable recommendations for different stakeholder groups engaged in mathematics teacher education and the integration of IoT with artful approaches.

For teachers, professional development should emphasize not only the technical use of IoT tools but also their creative and pedagogical integration. Teachers are encouraged to design classroom activities that connect IoT data with mathematical modeling, visualization, and esthetic exploration. Embedding artful thinking into instructional practice can foster both conceptual understanding and student engagement.

For administrators, institutional support is essential to sustain innovative practices. This includes providing access to IoT infrastructure, ensuring reliable technical support, and creating opportunities for collaborative experimentation across departments. Administrators can also establish incentives and recognition systems that encourage faculty to integrate interdisciplinary, creativity-oriented approaches into their teaching.

For policymakers, curriculum frameworks should explicitly recognize the potential of IoT to promote interdisciplinary and creative learning in mathematics education. Policy initiatives can support pilot programs, fund longitudinal and cross-cultural studies, and allocate resources to reduce disparities in access to emerging technologies. By embedding creativity and technological fluency within national and regional education strategies, policymakers can align IoT integration with broader goals such as the SDGs, particularly SDG 4 (Quality Education) and SDG 9 (Innovation and Infrastructure).

Collectively, these recommendations highlight that successful implementation of IoT and artful approaches in mathematics teacher education requires coordinated action across classroom, institutional, and policy levels.

4.5. Identified gaps in the reviewed literature and future research directions

Although existing research demonstrates the promise of artful IoT integration in mathematics education, critical gaps remain. These include a lack of longitudinal studies, limited cross-cultural and interdisciplinary investigations, and the absence of robust assessment tools. Addressing these gaps is essential to strengthening both research and practice in this emerging field. The gaps include:

- Limited longitudinal and large-scale studies: The majority of reviewed studies employed small-scale, short-term interventions, highlighting the need for longitudinal research to assess the sustained impacts of artful IoT integration.[134] Long-term studies could illuminate how creative pedagogies influence teaching practices, student outcomes, and professional identity over time.[135]
- Insufficient cross-cultural and interdisciplinary investigations: Current research seldom examines how cultural differences influence the integration of artful IoT practices in mathematics education.[136] In addition, there is a lack of interdisciplinary collaborations between educators, technologists, and artists. Expanding the cultural and disciplinary reach of future studies will enhance understanding and promote more tailored, inclusive pedagogical strategies.[137]
- Lack of robust assessment frameworks for creative mathematical learning: A significant gap remains in the availability of validated assessment tools capable of measuring creativity, interdisciplinary reasoning, and esthetic appreciation within mathematical learning contexts.[138] Developing creative assessment models is critical for capturing the full scope of learning outcomes associated with artful IoT integration.[139,140]

In response to these gaps, future research must prioritize long-term studies, culturally responsive models, and the development of creative assessment frameworks. Advancing these areas will enhance the sustainability, inclusivity, and impact of artful IoT practices in mathematics teacher education. The details are as follows:

- Investigating long-term impacts of artful IoT experiences: Future research must investigate the longitudinal effects of artful IoT experiences on mathematics teaching practices, professional development, and student learning outcomes.[141-143]
- Developing culturally responsive artful IoT models: Researchers should focus on developing culturally responsive artful IoT models that reflect diverse student populations, thereby promoting inclusivity in mathematics education.[144-146]
- Creating and validating creative assessment tools**:** There is an urgent need to create and validate assessment tools capable of authentically measuring creative mathematical inquiry and interdisciplinary integration.[147-149]

4.6. Limitations of the review

While this systematic review offers a comprehensive synthesis of research at the intersection of IoT technologies, artful thinking, and mathematics teacher education, several limitations should be acknowledged. First, the review was restricted to English-language, peer-reviewed studies published between 2010 and 2025. This exclusion of studies in other languages or gray literature, such as dissertations, reports, and conference proceedings, may have introduced language and publication bias, limiting the diversity of global perspectives represented.

Second, the included studies exhibited substantial methodological heterogeneity, ranging from qualitative case studies to quasi-experimental and mixed-methods designs. Due to this diversity, a formal meta-analysis was not feasible. The synthesis, therefore, emphasized thematic aggregation, which provides meaningful insights but does not allow for statistical generalization. Findings should thus be interpreted with awareness of the differences in study design, sample size, and context across the literature.

Third, although the MMAT was applied systematically to assess methodological quality, the diversity of research designs still posed challenges in ensuring consistent evaluation. To enhance transparency, additional criteria were incorporated, including clarity of reporting, integration of creativity within study design, and explicit alignment with mathematics teacher education. Future reviews may strengthen comparability by complementing MMAT with other standardized appraisal frameworks that capture domain-specific considerations.

Finally, the relative novelty of research combining artful thinking with IoT in mathematics teacher education presents an inherent limitation. Much of the existing literature consists of exploratory or small-scale studies rather than longitudinal or large-scale investigations. As a result, conclusions about long-term effects on preservice teachers' professional identity, pedagogical competencies, and student learning outcomes remain preliminary. Continued empirical research, particularly longitudinal and cross-cultural studies, will be essential for advancing and validating the insights generated in this emerging field.

5. Conclusion

5.1. Summary of key insights

This systematic review explored the intersections of IoT technologies, artful thinking, and mathematics teacher education, synthesizing findings from 77 selected studies published between 2010 and 2025. The analysis revealed that integrating artful IoT applications into mathematics teacher preparation fosters transformative educational experiences by promoting creativity, interdisciplinary inquiry, and technological fluency. Specifically, IoT technologies were shown to function as versatile mediators that bridge technical content with esthetic and imaginative engagement, reshaping traditional perceptions of mathematics as a rigid and purely procedural discipline.

Three major conceptual areas emerged from the literature. First, artful conceptualizations of IoT emphasized the role of multisensory learning experiences and the reimagining of mathematics as an interdisciplinary, culturally embedded endeavor. Second, applications of IoT in practice—including sensor-driven installations, wearable technologies, and real-world data interpretation—demonstrated powerful avenues for creative mathematical modeling and experiential learning. Third, innovative and sustainable practices linked IoT integration with broader societal goals such as ecological awareness and sustainable development, highlighting the ethical and civic dimensions of mathematical education.

Despite these promising developments, significant challenges persist. Many studies noted barriers such as limited access to infrastructure, professional development gaps, cultural resistance to open-ended pedagogies, difficulties in assessing creativity, and ethical concerns regarding data use. These issues underscore the necessity of systemic support structures and cultural shifts within teacher education programs to fully realize the transformative potential of artful IoT integration.

5.2. Contribution to the field

This review makes several substantive contributions to the emerging discourse on technology-mediated creativity in mathematics education. First, it critically advances the argument that existing pedagogical frameworks, such as TPACK, require expansion to explicitly incorporate creativity, esthetic engagement, and sustainability as foundational dimensions. By doing so, it responds to calls in contemporary scholarship for educational models that better prepare future teachers for the complex demands of 21st-century learning environments.

Second, the review situates IoT technologies not merely as tools for technical enhancement but also as cultural and communicative artifacts that mediate rich meaning-making processes, drawing on sociocultural learning theories. The integration of artistic and technological experiences fosters deeper conceptual understanding, intercultural competence, and adaptive thinking skills among preservice mathematics teachers. This perspective enriches the theoretical foundations of teacher education by emphasizing the mediational role of technology in the formation of professional identity and pedagogical practice.

Third, the findings articulate the essential role of sustainability-oriented education in the mathematics curriculum, advocating for a reconceptualization of mathematics as a discipline that must engage with real-world problems related to social justice, environmental stewardship, and innovation. Embedding sustainability, creativity, and interdisciplinary problem-solving into mathematics teacher preparation advances the alignment of education with SDGs (particularly SDG 4 and SDG 9), thereby reinforcing education's responsibility toward global citizenship.

Finally, this review identifies practical recommendations for curriculum development, professional learning, and institutional policy, offering a comprehensive roadmap for stakeholders interested in cultivating technologically literate, creatively agile, and socially responsible mathematics educators.

Acknowledgments

None.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

As this study is a systematic review of published literature, ethical approval was not required.

Consent for publication

Not applicable.

Availability of data

The data generated or analyzed during this systematic review are derived exclusively from publicly available research articles. All data supporting the findings of this study are included within this published article and its referenced sources.

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ARTICLE

Ecocritical readings of medieval German and Latin heroic poetry

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Abstract

While the living conditions of the Anthropocene pose dangerous consequences for humanity, they have also heightened our attention and sensitivity to nature, that is, our natural environment, even when looking back into the past. Scientists and literary scholars have discovered that ecocriticism strongly contributes to a deeper, refined insight into the interaction between human actors and natural agents. Many medievalists have thus begun to focus on how pre-modern poets reflected on water, the forest, mountains, animals, and plants as they impacted human life. This paper reviews a range of medieval heroic epics where specific aspects of nature matter extensively in shaping the protagonists' characters, experiences, and struggles. Activities, such as crossing a body of water, traveling through forests, climbing mountains, staying in caves, landing and fighting on islands, or living in wilderness areas assume critical functions in narrative development. Although the ecological concerns in these medieval texts may differ from those found in post-modern literature, close readings of major representatives of this genre indicate that medieval poets already demonstrated significant awareness of the close connections between humans and their natural environment.

Keywords: Ecocriticism; Medieval heroic epics; Nature in the Middle Ages; *Beowulf; Waltharius; Nibelungenlied; Kudrun; Das Lied vom Hürnen Seyfrid*

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Citation: Classen A. Ecocritical readings of medieval German and Latin heroic poetry. *Arts & Communication*. 2026;4(1):025170027. doi: 10.36922/AC025170027

Received: April 25, 2025

Revised: May 8, 2025

Accepted: May 14, 2025

Published online: May 30, 2025

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1. Introduction

As is well-known, the Old English *Beowulf* (ca. 750) is significantly determined by the protagonist's encounters with the natural environment, particularly his willingness to accept the challenges of bodies of water. First, he crosses the Baltic Sea to travel from Sweden to Denmark; then, at Hrothgar's court, his heroic accomplishments during his youth are questioned by one of the king's retainers, Unferth. He rejects this slander by insisting on his major triumph in the wild sea, gaining victory not only over the wild creatures in the deep water but also over his competitor, Brecca. In the course of the two battles, first against Grendel and then against Grendel's mother, the poet outlines, in impressive detail, the natural conditions of the territory where those monstrous creatures exist, including their fins and the body of water. Yet Beowulf is never intimidated by these natural obstacles and demonstrates his dominance over those elements and those uncanny creatures. Finally, having accomplished all his goals, he returns home, crossing the sea once again, which transforms that body of water into a symbol of Beowulf's heroism, life journey, and existential medium.

Even 50 years later, when he faces the fire-spewing dragon in its cave, the mighty protagonist does not shrink back from the danger and faces it head-on. We know the outcome, the death of both opponents, and the survival of Beowulf's retainer, Wiglaf, who reprimands all the other men for their cowardice and neglect of their oath of loyalty. After the dead dragon has been pushed over the cliff into the sea, never to be seen again because "the flood embrace[d] the keeper of those splendors."[1(p293)] Once the enemy has been eliminated, the funeral process is carried out. Specifically, Beowulf's corpse is turned over to the flames: "wood-smoke ascended swart over the blaze, roaring flames interwoven with weeping – the wind currents subsided – until it had broken down the bone-house hot in its very heart."[1(p293)] The poet placed two of the four fundamental elements in the central position, and the other two, air and soil, complement the funeral.[2] The great hero's life has thus come to an end, a man who represented and fought for humankind as its savior, and a person who was not daunted by natural forces.[3] However, despite all his physical strength and leadership qualities, Beowulf ultimately failed because he overestimated his abilities as a single warrior and did not ask any of his retainers for help. This failure finds its vivid expression in the hero's ardent desire to see parts of the golden treasure from the dragon's hoard just before his death: "Make no delay now, so that I may perceive the wealth of the ancients, golden objects, see plainly the brilliant jewelry, so that in view of those costly things I will be able to give up more gently my life and my nation, which I have held for long."[3(p267)]

If we accept these critical aspects in this early medieval heroic epic poem, it becomes abundantly clear that both this work and most likely most other literary works in this genre need to be analyzed while keeping the ecocritical perspective in mind. Human actions never take place in a vacuum, though it often remains unclear to what extent natural conditions contribute to, interact with, inhibit, or hamper the hero, or influence his mindset. The hypothesis for this paper consists of the argument that paying close attention to the natural framework within which human actions take place helps to uncover deeper levels of meaning conveyed by the respective narrative. Considering, for instance, how easily Beowulf could handle the challenges of water, either in the swimming contest or in crossing the sea between Sweden and Denmark, not to mention his dive into the water following Grendel's mother to her lair, where he manages to kill her and to decapitate the dead Grendel, we can certainly conclude that this natural element had an enormous impact on this hero or allowed him to accomplish his heroic deeds. Not surprisingly, when he later faces the dragon and its fiery breath, he can, with the help of Wiglaf, defeat the monster, but he, as a man so intimately associated with water, has to give up his life as well. The burning of his dead body thus fittingly concludes this monumental episode.[4]

2. Ecocriticism in medieval literature

Nature is, according to the anonymous poet, not a passive reality; instead, it engages with the hero and assumes a certain degree of agency. Already in 1997, Otto Kinne[5] – and he was not even the first – had urged us to include the natural environment as one of the key components of all ethical reflections because human society exists within and is dependent on nature.[6] Recent anthropologists have occasionally charged Western literature with viewing nature as only a passive and irrelevant agent, while the opposite can be observed in Australian Aboriginal literature, for instance.[7] This is a dangerous approach to literature because it unnecessarily idealizes certain ethnic groups as being more in tune with nature than others, who are normally associated with the Western, previously only European culture. However, when we turn to medieval heroic poetry, we can actually realize that it allows us to recognize a strong correlation between the hero's actions and the natural setting, which assumes, at least indirectly, an active role in the protagonist's life and gains the character of an agent. At issue here is not the question regarding ethics and nature,[8] but regarding the human interactions with and observation of nature within the literary discourse, such as the Middle High German heroic epic poems.

Many post-modern theoreticians have already projected the alternative to human existence here on Earth by migrating to other planets or similar stellar objects, where enough water and oxygen might provide the necessary conditions to survive.[9] In contrast to such a sci-fi pipedream, the real task we all face is to work hard with our material existence as it is and to protect it so that humanity can survive in the future. This implies concretely that we develop a strong sensitivity to nature as a sort of partner we have to look out for. This specifically entails a learning process taking us in many different directions, including science and medicine, as well as literature and philosophy. To learn once again the necessary respect for and love of nature as the bedrock of our livelihood, ecocritical perspectives toward medieval narratives promise to serve as critically important catalysts to achieve that goal in at least some respects.[10] We could easily take into view the personal relationships between animals and people, or the impact of weather on the protagonists in a specific narrative. However, for a concise approach, here the focus will rest on the interactions of the heroes with their natural environment, which, at closer analysis, contributes in many different ways to their characters, their strengths, and even their knowledge of the future.

While the function of the natural environment has already been discussed by various scholars focusing primarily on modern literature,[11] here I address how a variety of Middle High German poets (and one writing in Latin) perceived nature within their heroic epic poems and how they qualified it as an agent directly interacting with the protagonist.[12] Curiously, the oldest representative, the balladic *Hildebrandslied* (ca. 820), excludes all references to the natural world and examines only the verbal exchanges between the old warrior Hildebrand and the young opponent, Hadubrand, who is, as it later turns out, his son but believes that his father died a long time ago in a battle. Next, even though the poet Priest Conrad created a German version of the Old French *Chanson de Roland* (ca. 1150) with his *Rolandslied* (ca. 1180), certainly closely related to the genre of the heroic epic poem, we would have to leave this aside in our discussion because the heroic elements are overshadowed by numerous other aspects correlated related to the role of Emperor Charlemagne and extensive military clashes with the Muslim forces. Nevertheless, in future studies, it would be productive to investigate more closely to what extent natural elements matter here as well because the final battle between the Christians and their opponents takes place in the famous Valle Roncesvalles in the Pyrenees. We would have to reflect further on the function of the mountain setting and the specific role of the valley where the fighting erupts. Otherwise, the ecocritical lens has already proven to be highly effective in uncovering new levels of meaning in medieval literature at large, but heroic poetry has not yet been subjected to this specific interpretation. Both water as such and the forest/trees in the Middle Ages have already been recognized as significant aspects with a great impact on human life, maybe not quite yet with a concern about destruction, loss, pollution, and elimination caused by people's actions. However, as we know by now, natural settings are regularly described as deeply influential for a person's growth, conditions, and potential, such as in the case of young Parzival in Wolfram von Eschenbach's eponymous Grail romance (ca. 1205).[13]

Humanity has never lived in splendid isolation separated from the natural environment, and much of our imagination, cultural concepts, economic conditions, and common operations are predicated on how natural elements interact with us, how we perceive them, and what they do to us in countless ways.[14] Of course, we cannot expect an explicitly ecocritical commentary in pre-modern literature, but there are many opportunities to identify human awareness of, fear about, interest in, or curiosity about the natural elements. Without going into details here, the 10th-century Latin epic poem *Waltharius* demonstrates in the clearest terms the enormous importance of the natural environment for the protagonist, particularly during his escape from the Huns, who had kept him as their hostage. The protagonist and his fiancée hide in the forest during the day and travel at night: "They flee the villages and leave behind the beautiful fields, following their winding, curved path through uncut mountains, they turn their nervous steps this way and that through the pathless wild."[14(p69)] Moreover, uncivilized nature continues to protect them later once they have crossed the river Rhine and reached a seemingly safe point in a cave. There, Waltharius sets up his valiant and powerful defense against King Gunther and his men while standing at the entrance to a cave in the Vosges Mountains, and later, when he and his bride are ambushed by Gunther and his liege man Hagen.[15]

Almost throughout the entire poem, nature emerges as an essential component, sometimes supporting the protagonist to hide in the forest during the day, sometimes betraying him to King Gunther when his payment for the ferry across the Rhine by means of fish reveals to the latter that a foreigner has traveled through his land. However, the cave in the mountains ultimately makes it possible for Waltharius to defend himself effectively and with brutal force against all those warriors whom Gunther has sent toward him to belittle and to punish him. The poet did not give nature an independent voice, but it is unmistakable how much it contributes to the protagonist's ultimate success and triumph over King Etzel/Attila and later over King Gunther.

3. *Nibelungenlied*

Many of the elements in *Waltharius* can then also be discovered in the Middle High German epic *Nibelungenlied* (ca. 1200), yet their nature reveals an uncanny degree of underworldly powers. Although this masterpiece of medieval German literature has already been the object of intensive investigations, ecocritical approaches are still a rarity.[16] However, a careful analysis can uncover many significant features in this poem that demonstrate the close correlation between the protagonists and the natural environment.[17] In fact, much of the narrative development appears to be predicated on the role assumed by natural elements, entities, or forces, and the protagonists' reactions to them confirm the instrumental function in the entire plot development.

Siegfried has gained much of his supernatural power by way of killing a dragon, bathing in its blood, thus gaining an impenetrable skin, and by defeating the king of the dwarfs, Alberich. With the latter's cloak of invisibility, he acquired the additional strength of 12 men. The realm of the dwarfs is underground, in the mountain, so Siegfried's victory constitutes his connection with that world, and

he returns there once when he needs extra forces after his secret victory over the Icelandic Queen Brunhild on behalf of the Burgundian King Gunther. At the same time, the entire episode indicates that Siegfried here operates somewhat in parallel with Beowulf, crossing at miraculous speed the open body of water from the city of Worms on the Rhine to Iceland far north in the Atlantic.

There, however, he pretends to be Gunther's vassal to deceive the queen, putting on the mysterious cloak and accomplishing the three competitions against Brunhild, which forces her to accept Gunther as her future husband. When she subsequently seems to resist and calls together all her people, Siegfried returns to the underworld and calls up the mighty Nibelung warrior, who settles the case in favor of the Burgundian king. Then, Brunhild is forced to travel with the company back to Worms, where more dramatic events await. All this confirms, however, that Siegfried is the master both of the mountainous territory deep below the surface and of the waterways that he apparently knows well and can traverses with ease. This is confirmed when Gunther deliberates with him and Hagen on how he should carry out the bridal quest. With just a little coaxing, Siegfried assures him: "I can guide you safely from here on the water, rest assured. I know all these waterways."[17(stanza 378, p33)]

Without going into further details, we can conclude that Siegfried is intimately associated with primordial forces in nature, which he subsequently demonstrates also when he goes hunting and kills not only so many animals that the other warriors beg him to keep some of them for themselves, but he also catches a bear alive, ties it up, and transports it to their camp. There, he releases the poor animal, which, very confused and terrified, races throughout the tents, scares everyone to death, and tries to get away until Siegfried catches up with it and kills it triumphantly, thus demonstrating his complete mastery over the wild animals and the forest. However, this then sets the stage for Hagen's assassination attempt, which significantly takes place at a well where the unsuspecting victim bends down to drink water, providing the ideal opportunity for Hagen to hurl the lance into his one vulnerable spot on the shoulder blade and thus to kill him.

Throughout the Middle Ages and far beyond, water in a well has continuously carried deep symbolic meaning, whether we think of the legend of Gongolf (Hrotsvit of Gandersheim), the Arthurian romance of *Yvain/Iwein* (Chrétien de Troyes, Hartmann von Aue), the mythical accounts of Melusine, biblical narratives, or fairy tales.[18] The same applies to this famous scene in *Nibelungenlied*, which is then extended to the court where the hero's corpse is transported to and then placed on a bier. Although blood is not the same as water from a well, it is, as a liquid, supposed to speak the truth, and when Hagen walks by the corpse, it starts bleeding again, which reveals Hagen's culpability as the murderer, as many scholars have already pointed out. Tragically, of course, the clear and potable water of the well in the forest has transformed into the blood that is oozing out of Siegfried's body. Ponderously, at the very end of the epic poem, when most of the Burgundians have already been killed and they are badly parched and face a fire, they turn to the blood of their fallen compatriots and drink that upon Hagen's recommendation, certainly a grotesque travesty of the crystal-clear water emanating from the well serving excellently to quench the hero's thirst.[19]

Most tellingly, when the Burgundians travel to the land of the Huns upon Kriemhild's invitation, they also have to cross the Danube, which proves to be a major challenge since there is neither a bridge nor a ferryboat. Indeed, the river constitutes a critical barrier that no one knows how to cross at first: "the river was too wide at that point. Many of the brave knights dismounted there."[19(stanza 1527, p126)] Hagen searches for options and comes across a pond where three water nixies swim. By removing their clothing, he forces them to prophesy their future. The first one lies to him outright and projects a glorious outcome. However, once he has returned their garments, the second one reveals the truth to him that they will all die, except their chaplain, which later turns out to be correct. Hagen then searches for a ferryman downstream, but he gets into a conflict with him and slays him, as he always tends to do with any opponent. However, to his chagrin, when he subsequently tries to drown the chaplain as a test of the veracity of the nixies' prophecy, this does not work, and the poor cleric manages to swim to the shore. Thus, the mighty steward knows that they are doomed, so he destroys their boat, the meaning of which remains unclear to all the others, although Hagen reveals the true reason to his brother Dankwart, but the latter does not respond or comment on this horrible news.[19(stanzas 1581-1582)]

The rest is then history, so to speak, with all their doom waiting for them at King Etzel's court. The poet limits himself to describing the subsequent events, especially at Rüdiger's court, and then in the land of the Huns. The poem focuses almost exclusively on the exchanges between the various major figures until the fighting breaks out, which then turns into a veritable Armageddon. Nature, however, does not play any significant role in all that, whereas the setting at the court, the various chambers and halls, assumes the central background for the fierce fighting and killing. In a way, we could argue that the horrible development leading to all their deaths also has something to do with their turning away from the protective framework of nature (forest, the ocean, the river, and the pond) toward

the exclusively human construction, where unfettered emotions clash with each other. As our next example will illustrate, however, that tragedy and its transformation into human happiness can also be associated with natural elements.

4. *Kudrun*

About 60 years later, an anonymous poet created a remarkable heroic poem divided into three parts in which the theme of the bridal quest assumes central importance. *Kudrun* (ca. 1260) has recently attracted considerably more attention, especially because in the third section, the female protagonist, granddaughter of the first major hero, Hagen, refuses to submit to the model of kidnapping princesses and forcing them to marry the victorious kidnapper, a bold and powerful prince from far away who can resist the attempt of the maid's father to retrieve his daughter.[20]

There are some intriguing reasons to speculate that a female poet might have composed this poem because, at the end, Queen Hilde rules after her husband Hetel's death in the battle against Hartmut of Ormanie, who had kidnapped Kudrun. An even more important reason is that Kudrun eventually intervenes and brings to a stop all the fighting between, on the one hand, her brother Ortwin and her original fiancé, Herwig, and, on the other hand, Hartmut and his family. She faces severe difficulties in this effort to re-establish peace because the warriors on her side are so fanatical in getting their revenge, but ultimately, Kudrun can calm warriors, such as the hoary Wate and also her recalcitrant mother, Hilde, substituting all military conflicts with diplomatic relations and marriages to avoid future fighting.[21]

The poet is deeply intrigued by spatial concepts and has the various protagonists operate in many different locations far away from home. This move from one place to another, either by force or voluntarily, emerges as a constant pattern throughout the entire text, which closely associates the various figures with the changing natural settings. Beginning with Hagen, the first hero in the grandfather generation, we learn about the young child being abducted by a griffin who takes him to a distant island, where three foreign princesses await their destiny. However, Hagen is strong enough to fight against the griffin and to kill it, and thus liberate the three women, one of whom he later marries, Hilde.

The status of the island deserves further attention, but first, we can recognize the parallel to the other bridal quest when Hartmut has abducted Kudrun and finds himself in a severe fight against her father on the island of Wülpensand. Details do not need to be examined here, whereas we only pay attention to the significant geophysical distance to the warrior's home. We can observe a meaningful arc between the island where the grandfather (Hagen) had been abducted to by the griffin in his youth and the island where Kudrun's father is slain by her kidnapper, with the traditional bridal quest having gone to an extreme with no foreseeable constructive solution, as in all previous cases. The island thus emerges as a curiously isolated space where human destinies are determined, as we also know from Gottfried von Strassburg's *Tristan* (ca. 1210), where the young protagonist kills his opponent, the Irish knight Morold, after the latter has badly wounded him with his sword covered with a terrible poison.[22] Following Homi K. Bhabha, or rather adapting his concept for this medieval topos, we could call this a "third space" where the narrative takes a surprising turn and forces people to reflect deeply on their destiny.[23] On the island, traditionally, social and cultural norms are lifted, which gives raw forces of nature or people free rein. Thus, Kudrun's family is mostly decimated there, and she is forced to accompany her kidnapper to his kingdom.

However, due to the role of water in her life in captivity, the female protagonist preserves her strength to resist all attempts by Hartmut and his parents to crush her will and determination. She and her maids are forced to wash clothing in the icy cold water of the sea, and that is where they are discovered by her liberators many years later.[24] The entire epic poem is determined by the world of the open sea, with the various heroes regularly traveling by ship from one kingdom to another, often suffering from dangerous winds or at one point, the magnetic mountain. However, the worst is reserved for Kudrun, who is ordered by Hartmut's mother, Gerlint: "You will carry my clothes down to the beach every day, and you will wash them for me and my household, and you will take care that no one ever finds you idle."[24(stanza 1053, p.101)] Their suffering is great because of the inclement weather and hard labor, as we hear more about just when Kudrun's liberators arrive and begin talking to them: "They shivered on account of the cold, those poor servants. They were shabbily dressed, and the cold winds of March were blowing."[24(stanza 1216, p115)] However, at that point, hope returns to them, which is also indicated by the change of the weather: "It was the season when winter retreats, and the birds compete in wanting to sing their songs again after the days of March."[24(stanza 1218, p115)] Yet, snow is still on the ground, the water is partly covered by ice, the wind blows mercilessly, which strongly contrasts with the imminent change of events, since Kudrun's warriors have arrived.

Beyond this scene, no further comments regarding the natural environment emerge because the narrator is, from then on, focused only on the battle to free the

princess and then on Kudrun's intense efforts to establish peace by means of marriages. Nevertheless, nature played a significant role throughout the epic, highlighting each time when a major change in the events was to happen. In contrast to the *Nibelungenlied*, which ends in an absolute fiasco, Kudrun and her maids are freed, they can return home, and good diplomatic relations are established, which makes it unnecessary for the poet to reflect any further on the natural framework. We hear about another kidnapped maid in a late medieval or early modern heroic ballad, but she is then kept as a prisoner on top of the mountains.

5. A late medieval heroic poem: *Das Lied vom Hürnen Seyfrid*

Many Middle High German poets were deeply engaged with the genre of heroic epic poems, which are mostly located in the Alpine regions and present the adventures of mighty characters, especially Dietrich of Bern. They consistently stand out within their society due to their physical might and fearless engagement with monstrous creatures, mostly dragons.[25] In the course of time, many of the motifs merged and formed a narrative repertoire from which new poets could easily draw, as is also the case with the late medieval balladic poem, *Das Lied vom Hurnen Seyfried* (*The Song of Seyfried with Skin Hard as Horn*), copies of which are preserved only in early modern prints, which makes accurate dating virtually impossible.[26] Basically, it tells the story of Siegfried liberating a princess whom a dragon had abducted and held at a remote location in the mountains. To add to the mystery of the story, that dragon is actually a human transformed into this monstrous shape who waits for the long-awaited moment to regain his original figure and thus to marry Kriemhild.

My only concern here, however, focuses on what the poet has to say about nature and its impact on the protagonist, just as in the previous cases. However, we also face a serious interpretive challenge because this poem consists of many diverse pieces that are loosely stitched together and often seem to contradict each other. In other cases, they pick up an issue that was addressed already before, all depending on the print version we might consult. The end result of a fairly intensive printing process can thus be identified as a literary bricolage that does not lend itself well to a consistent reading of the text.

As we have noticed numerous times when the narrator of a heroic epic poem engages with battles or courtly ceremonies, nature disappears completely from sight; however, as soon as the narrative takes another turn, its significance reappears and begs for attention. This is also the case in this balladic version of a heroic poem, where a number of innovative scenes enter the picture (HS refers to the print used there). The young hero is overly boisterous and dangerously powerful, so the family, following the councilors' advice, sends him off into the world, and Seyfried soon reaches a village at the edge of the forest where he takes up employment with a blacksmith.[26(stanza 4)] However, even there, he is too forceful and destroys the anvil through his mighty strikes with the hammer, which severely irritates his master and the other servants. To get rid of him, the former sends him off to a charcoal burner to fetch more coal, but in reality, he expects him to run into a dragon who would surely kill him.[26(stanza 6)] Significantly, that dragon is placed behind a lime tree ("Linde"), the symbolic tree of love since antiquity (Ovid) and recognized as such by many medieval court poets (Walther von der Vogelweide). However, here the dragon is only monstrous, and yet the hero can slay it,[26(stanza 7)] upon which he enters more deeply into the forest, where he encounters a whole nest of dragon-like creatures. Without any concerns, he throws whole trees on them, fetches charcoal, dumps that on them all, and can thus burn them to death.

In an odd retrieval from the *Nibelungenlied*, strange liquid oozes from the site, and when Siegfried has dipped his finger into it, his skin becomes covered with a horn. He realizes that this would be a tremendous protective layer on his body, so he covers himself completely except at the shoulder blade, which the narrator identifies as the very spot where he would later be killed.[26(stanzas 16, pp7,8)] Further adapting the older source, we are also told how Seyfried conquered the hoard from the dwarfs,[26(stanzas 14,15)] but details are scarce. We are only told that many warriors later lost their lives there, except Dietrich von Bern and Master Hildebrand,[26(stanza 15, pp7,8)] which proves to be yet another loan from a different narrative strand.

In HS II, the poet basically relied on the initial scene in *Kudrun*, as the dragon kidnaps the young princess, Krimhilt, but, as it then turns out, behind the horrible monster mask there is a young prince who will shed this outer body within five years to take possession of her,[26(stanzas 37 and 41)] although he then also threatens her that they both will end up in hell. Only then does the narrator turn to Seyfrid, who, as a mighty young hero, comes across the site where the dragon rests, but first he has to find his way through the wilderness, which eventually makes him feel despondent, no longer having any orientation.[26(stanzas 50)] A dwarf then grudgingly helps him understand his family background and the situation with the unfortunate maid,[26(stanza 50)] alerting him to the necessity for him to fight first against a giant to gain the keys for the gates to the dragon's lair.[26(stanza 59)] However, as another dwarf then informs him, without the giant he cannot gain the keys.

Whereas Waltharius utilized the cave to protect himself, Seyfried must enter the depth of the cave to move toward the dragon's lair,[26(stanza 49)] and at that moment, the giant comes forward and grants him a magical sword, the only one with which the monster can be killed.[26(stanza 107)]. However, immediately afterward, he betrays him a third time, which results in a mighty wrestling match, which Seyfrid can win for himself. Although the giant begs for his life, he is then thrown down the cliffs and is smashed to pieces.[26(stanza 114)] The maid would have thrown herself off the rock to commit suicide if her hero had not gained the victory, certainly another significant component highlighting the extreme drama of this scene,[26(stanza 110)] but Krimhilt finds this outcome to be comical and laughs about it, which seems rather curious and almost inappropriate.

Before the fight against the dragon begins, the hero needs refreshment since he has not eaten or drunk anything for four days. The dwarf Eugel brings him all he needs, but then the dragon arrives, spewing fire from its snout, which makes the rocks melt like glass, causing complete havoc: "*Das, seyd die welt was gestanden,/Der stein so was zerruet*" (so that, since the creation of the world, the rocks had never before been damaged more than in that moment).[26(stanza 129, pp7,8)] All the dwarfs who had assisted the hero or who had stayed in the mountain underneath the dragon's rocks flee, and two guardians of their treasure move it out and hide it in another cave. However, the dragon knows the passage to that other cave too well since he tends to rest there to cool down. The maid and the hero hide in that lower part of the mountain and wait until the heat has somewhat abated. Then Seyfrid boldly faces the dragon again, although he has to suffer more than ever in his life and would have died. In fact, the dragon is so powerful that he is about to toss the opponent off the cliffs to his death with the help of its tail, but the hero jumps up in time and attacks the dragon, so he overcomes, in a way, the very danger that the Old English hero Beowulf had to face and in which he then died. The heat then increases so much that the dragon's skin made out of horn begins to melt, which finally provides Seyfrid the opportunity to strike the monster and kill it. He simply tosses the corpse down into the abyss, and this is the end of the battle.[26(stanza 148)]

The poem is then wrapped up fairly quickly; the two survivors recover, though with difficulties, the king of the dwarfs, Eugel, explains how they all had been subjugated by the giant, and out of gratitude, he and his people submit themselves under Seyfrid to serve him. As Eugel explains, if the giant had not been killed, he would have turned against them all and avenged their move to reveal the secret of how to reach the dragon's rock through a portal in the cave. Moreover, based on his astrological expertise, he predicts the protagonist's future, that is, his murder, and that his wife would avenge him in a terrifying manner, leading to the death of all warriors.[26(stanza 162)] We also learn more about the treasure that Seyfrid fetches from the mountain cave and subsequently pours into the water of the Rhine.[26(stanza 167)] In the final stanzas, we are briefly told about the hatred and envy that Hagen and the other kings feel about Seyfrid because he holds a much higher rank than they all, and thus about his assassination.

It proves to be rather difficult to follow the various events in this hybrid poem, where many diverse narrative elements are combined, drawing from the *Nibelungenlied* and other epic poems. The focus, however, rests on Seyfried's battle against the dragon, the central role of the mountain and the underground, the cave, the treasonous giant, and the dwarfs. The poet presents a highly complex system of tunnels, gates, and halls underneath the top of the mountain, where the dragon rules. We do not learn who might have created the gates, or the lock, and hence the keys, but the entire setting indicates a mix of natural settings and human-made contraptions. The dwarfs mirror human society below the mountain, whereas the dragon represents the monstrous forces. The rocks even assume a significant role because they begin to shake and become so hot that a melting process sets in. It is not clear how Seyfrid even manages to survive this horrible fire, but in that heat, even the dragon's skin made out of horn melts, making it vulnerable.

Altogether, the poet presents a narrative bricolage with many different elements borrowed from the rich tradition of Middle High German heroic epic poems and maybe even the Latin epic, *Waltharius*. The standard features of this genre are all present, including the dragon, the skin covered with horn, the abduction of the princess, the appearance of the dwarfs, the giant, and the protagonist's superior courage, power, and resolve, which ultimately lead to his triumph over the giant and the dragon. It almost amounts to an irony that this glorious hero, once having returned to human society, faces petty envy and slander, and thus becomes the victim of murder.

This, then, finally allows us to reflect on the role of the mountain, or the rocks and the tunnels, because they all prove to be critically important in Seyfrid's efforts to overcome the giant and then the dragon. In contrast to many other narratives involving a dragon in a mountainous region, here we are presented with a sophisticated internal structure, with chambers, gates, passageways, a huge underground world where the dwarfs reside, the residence of the giant, hiding places for the treasure, and then the pathway to the surface where the dragon keeps the kidnapped princes and where the final battle with Seyfrid takes place. Whereas in *Beowulf* the dragon lives in its cave

along with the treasure, here the action is mostly focused on the mountain top, almost a tableau from where the victor can simply throw down the dead body of the dragon.

We never learn who created the interior structure, the gates, the locks, and other parts of the space inside the mountain. However, it is very clear that without the key to the gates or door, there is no way for Seyfrid to reach the top. Referring to the giant, for instance, the dwarf Eugel points out: "*Derselbig hat den schluessel,/Dauon der steyn auff gat*" (He holds the key with which the rocks will open up).[26(stanza 59, pp5,6)] The mountain thus proves to be a complex structure, not simply an immovable object in nature. Poor Krimhild is not only the dragon's prisoner, but she is kept high up on the plateau, as we may assume, which is inaccessible even to the protagonist. In fact, this adds even more weight to the ecocritical perspective: Seyfrid would not be able to achieve anything in that situation without the dwarf's information about the key, without the malicious and treacherous giant, and without the thousands of dwarfs assisting him to some extent. As powerful as Seyfrid appears to be, he has to engage with the mountain and its inhabitants, and yet even he would almost have died in the fire spewed forth by the dragon if he had not been able to hide for some time in the cave. In other words, the mountain itself emerges as his protector.

6. Conclusion

Apart from the *Hildebrandslied*, where nature does not matter in any notable fashion, Middle High German heroic poetry has proven to be strongly determined by the role played by nature. The poets do not assign it a specific role as a personal agent, but its presence is deeply felt and elaborated in many different fashions. It would hence be necessary to proceed further and examine the way other poets of heroic poems engaged with this aspect, such as in the *Rabenschlacht*, *Laurin*, *Dietrichs Flucht*, *Alpharts Tod*, or *Dietrich und Wenezlan*. However, it is often rather difficult to gain a better understanding of the role of nature there because the poets were so pre-occupied with the discussion of individual fights and entire battles. Nevertheless, as our small selection has already demonstrated, a careful reading of the background comments can reveal much information about the poet's attitude toward the natural environment, sensitivity regarding natural elements, awareness of natural symbolism, and at times even the secret agency of natural objects impacting the protagonist's life.

As we have observed regarding *Beowulf*, the crossing of natural spaces, especially the open water, consistently represents a major transition in the protagonist's life. This also applies to *Walthariuslied*, then to the *Nibelungenlied*, *Kudrun*, and, to some extent, the ballad of the *Hürnen Seyfried*. In the last text, however, there is no situation with water; the hero instead has to travel through a wild forest and reach the remote mountain where the dragon holds Krimhilt captive. That is also the same situation in *Kudrun*, where a griffin abducts young Hagen in the first stage of the narrative, who subsequently kills the monster and thus can liberate and rescue the three princesses.

Depending on the circumstances, there are forests, mountains, caves, rivers, ponds, and islands, and each time the hero has to adapt to a new environmental setting and respond to it. We would go too far by equating all these aspects with a post-modern sensitivity regarding and even empathy with nature. However, we can affirm without doubt that all these poets of heroic epics, either in Old English, Medieval Latin, or Middle High German, demonstrated considerable attention to nature and presented their protagonists in close interaction with it, as a protective space (e.g., forest and cave), as a location of physical challenge (e.g., river and sea), as a site where prophecies are promulgated, or as the location of murder and disorientation. The late medieval heroic epics tend to be situated in the Alpine regions, where they encounter the kingdom of dwarfs, giants, and also dragons/griffins.

Contrary to modern assumptions, neither the large bodies of water nor the daunting mountains represent simply fearful regions; instead, they emerge as major challenges and thus allow the heroes to demonstrate their power, determination, and values. Whenever a river or sea has to be crossed, the hero is the first to figure out a way or knows how to handle the situation, either because he knows from the past how to travel that route, or because he is knowledgeable enough to adapt to the danger, succeeding triumphantly over nature, but only until he is engulfed and killed by societal conflicts. In short, heroic epic poems demonstrate a strong awareness of the natural environment and utilize it consistently to profile their main characters more specifically. The natural forces are daunting, but the major figures demonstrate that they have enough power and wit to handle them to some extent. However, much depends on the circumstances because in the *Nibelungenlied*, for instance, Hagen's struggle against the power of the river signals, at least indirectly, that they are all doomed to die in battle. In *Waltharius*, however, nature provides protection for the protagonist. In *Kudrun*, catastrophic events take place on an island and at the shore of the sea. Finally, in *Hürne Seyfried*, the hero faces not only the dragon, but also the mountain itself with its caves, passages, gates, and hallways. Only once he has figured out that maze does he also achieve his victory over the dragon.

Without those dangers in nature, human figures would pale in their actions, especially because nature tends to

assume, at least within the narrative framework, a certain degree of agency that influences the major events. In fact, their heroic character is mirrored and amplified through the natural elements, whether they present challenges, opportunities, cover and protection, or dangers and direct threats.

Acknowledgments

None.

Funding

None.

Conflict of interest

Albrecht Classen is an Editorial Board Member of this journal but was not in any way involved in the editorial and peer-review process conducted for this paper, directly or indirectly.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

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Arts & Communication

ARTICLE

Aesthetics and liberation: Herbert Marcuse on the sociopolitical value of the arts

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Abstract

The role of the arts in society and politics was of profound concern to Herbert Marcuse in his philosophical work. From the 1950s to the 1970s, Herbert Marcuse – a prominent member of the Frankfurt School – became increasingly insistent on the fundamental importance of the arts for the well-being of both the individual and society. Recently, there has been a resurgence of interest in the philosophy and social thought of Marcuse. This paper highlights that Marcuse's conceptualization of the significance of the arts – especially their social and political roles – offers valuable insights for contemporary theorists, artists, and their supporters. This paper particularly focuses on the implications of Marcuse's work for understanding the role of the arts in fostering social change. It outlines Marcuse's ideas on political economy – his claim that technological development under capitalism has produced an abundance of output that could provide the basis for radical social and political change. In addition, this study examines the philosophical grounding of Marcuse's ideas regarding the role of the arts through the esthetic theories of Kant and Schiller. Some objections that might be raised against Marcuse's theories concerning the arts are considered critically. Finally, the affective potency and value of Marcuse's work are underlined.

Keywords: Herbert Marcuse; Frankfurt school; Arts; Aesthetics; Utopia; Surrealism

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Citation: Doran C. Aesthetics and liberation: Herbert Marcuse on the sociopolitical value of the arts. *Arts & Communication*. 2026;4(1):025190035. doi: 10.36922/AC025190035

Received: May 6, 2025

Revised: July 4, 2025

Accepted: July 8, 2025

Published online: July 28, 2025

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Herbert Marcuse (1898 – 1979), a leading member of the Frankfurt School, frequently addressed the question of the role of the arts in society in his publications from the 1950s to the 1970s. Toward the end of his career, he became increasingly insistent on the fundamental importance of the arts for the well-being of both society as a whole and individuals. His last published book, The Esthetic Dimension,[1] contained a summation of his views on the relationship between the realm of the esthetic and the development of community life.

This study underscores that Marcuse's conceptualization of the significance of the arts – and their social and political roles – offers valuable insights for contemporary theorists, artists, and their supporters. This paper particularly focuses on the implications of Marcuse's work for understanding the role of the arts in fostering social change. What Marcuse offers to our understanding of this crucial role for the arts will emerge through the exposition of his thought throughout this paper. For now, suffice it to say that

Marcuse believed – and argued consistently throughout his career – that artistic production could serve to prefigure the creative character of all labor, and indeed all of life, in an enlightened and free society of the future. The arts were capable of giving signs and hints of the possibilities of freedom, both in their products and in their processes. The conclusion offers a brief assessment of the impact of Marcuse's writings, with emphasis on their emotional – and indeed, inspirational – valences.

In the last decade, there has been a revival of interest in Marcuse's philosophy and social thought. With the hegemonic rise of neoliberalism from the late 1970s and the accompanying academic predominance of post-structuralism and deconstruction – in particular, the prevalence of the thought of Foucault and Derrida – Marcuse and the Frankfurt School in general, with the partial exception of Walter Benjamin, fell out of academic favor.

However, Marcuse's philosophical contributions have more recently come in for significant reassessment within academic debates – so much so that Clark[2] went so far as to question, in 2017, whether we are seeing a "New Marcusean Moment." Indeed, the second decade of the new millennium witnessed a resurgence of interest in Marcuse, as well as in the work of his colleagues, such as Adorno and Horkheimer.[3-7] There has even been a new biography of Marcuse published in graphic form.[8] No doubt, the ever-tightening grip of harsh neoliberal and globalizing policies in many areas of the world, exacerbated by the Global Financial Crisis beginning in 2007, has contributed to this reorientation toward the critical theoretical work of Marcuse, along with that of his Frankfurt School colleagues. Increasingly, authoritarian trends in political regimes around the world have redirected academic attention to theories of fascism. There is, however, no simple explanation for this phenomenon. There has been a concurrent upsurge of interest in Marcuse's contributions within specific fields of social theory, such as gender relations, technology, ecology, and the environment, as well as the arts.

The Frankfurt School was based in a research institute founded in Frankfurt and was composed of a group of radical German thinkers. The Institut für Sozialforschung (Institute for Social Research) was established in 1923 and continued in various forms and locations, as well as with various personnel, until the early 1970s.[9-12] As a school, it was strongly influenced by Marxism, but believed that Marxist theory needed to be continuously updated to meet the circumstances of the time.

The Frankfurt School – and the Critical Theory it strove to develop – was Marxist in methodological terms, in that it employed dialectical thinking as a method to approach the critical analysis of society. Critical Theory also drew inspiration from Freudian psychology, though often with results that would have surprised Freud. As one of the earliest "think tanks," the group initially focused on why Germany had not followed Russia into the communist revolution, as many radicals had expected. They later turned their attention to explaining the rise of fascism. Many of the ideas developed through the Frankfurt School's research also informed their interpretations of developments in Western societies, and in Asian societies, after the Second World War. Much of the institute's research was focused on problems of philosophy and aesthetics. Among the well-known members or close associates of the Frankfurt School were Theodor Adorno, Max Horkheimer, Walter Benjamin, Erich Fromm, and Marcuse, who joined the institute in 1933.

2. The economic base

Before exploring Marcuse's concepts of the arts in relation to social change, it is useful to begin with a brief outline of his economic ideas – an appropriate starting point for a Marxist or neo-Marxist thinker like Marcuse, given the foundational Marxist emphasis on the relationship between the economic base and the social and cultural superstructure. Although Marcuse did not write extensively or in depth about the economy, his ideas about the economy can be seen as the linchpin of his social and political thought. Instead of being ruled by the harsh discipline of scarcity – as assumed by both classical economics and the alternative system of economic thought developed by the Soviets – Marcuse believed that the modern economy was characterized, if not by abundance, then by the availability of an adequate sufficiency. It was on this productive economic base that Marcuse pinned his hopes for a future "non-repressive civilization."

As Marcuse saw it, the development of technology and productive capability – spurred by capitalism – had, by the post-war period (i.e., after the Second World War), generated enough productivity to meet the needs of all.[13(p7)] Marcuse applied this not just to the affluent West but to the whole world, arguing that if the existing productive output were distributed more equally – and fairly – there would be sufficient to meet the needs of populations in the developed, developing, and under-developed countries. Thus, Marcuse could write of "the possible conquest of want."[14(p138)] In many ways, this is the most subversive idea that Marcuse disseminated. It challenges the predominance and inevitability of what Marx, in a memorable phrase, called the "dull compulsion"[15(p523)] of material life – the economic imperatives and constraints that restrict the human spirit and creativity. Indeed, so

important were Marcuse's economic premises that if one does not accept his characterization of the fundamentals of modern industrial and post-industrial economies, then most of his philosophical ideas are likely to seem fanciful and irrelevant. This has been the basis, often unstated, for the positions of many of his critics. Yet, in the period, since Marcuse wrote, advances in computing, robotics, and artificial intelligence have only made his vision of economic sufficiency even more achievable.

Marcuse admitted that scarcity could never be completely eliminated, but its impact on individuals could be significantly alleviated by a more equal distribution of scarcity among members of the community – that is, by an overturning of the existing "hierarchical distribution of scarcity."[14(p40)] His emphasis on the existing, grossly unequal distribution of scarcity, has been confirmed by the recent analyses of Piketty,[16] who has stressed the ever-increasing inequality in virtually all economies around the world.

Moreover, Marcuse argued that the appearance of continuing scarcity was deliberately maintained by ruling interests for ideological purposes. He regarded the modern economy as resting on the proliferation of waste, obsolescence, managerialism, bureaucracy, corruption, and unnecessary military armament. In his view, the contemporary economic system relies on the artificial creation and intensification of a sense of scarcity: "Only the systematic increase in waste, destruction, and management keeps the system going."[13(p7)] Marcuse argued that the availability of abundant production provided the basis for radical social transformation, in which the arts played a crucial role.

3. Philosophical foundations

Marcuse's thinking on society and the arts was embedded in a long tradition of German philosophical thought that saw the ultimate goal of philosophy as contributing to the expansion of human freedom. In Eros and Civilization,[14] Marcuse set out the philosophical foundations of his approach to what he called the "esthetic dimension." He based this approach primarily on his reading of the philosophies of Immanuel Kant (1724 – 1804) and Friedrich Schiller (1759 – 1805). For Kant, the main reference was to the Critique of Judgment, often called the third critique, first published in 1790.

To summarize a complex body of work, the first two critiques of Kant[17] dealt with Pure – or Theoretical – Reason on the one hand, and Practical Reason on the other; however, in his theorizing, there was a lack of connection between the two realms. Theoretical Reason was Kant's answer to the problem of objective knowledge – it dealt with nature and causality and was a domain of necessity. Practical Reason, on the other hand, was concerned with ethics and was a domain of freedom. Kant believed that both metaphysics and ethics would be incomplete without a theory of the esthetic. He assigned to aesthetics its own mental faculty – esthetic judgment. According to Kant, the faculty of judgment mediates between understanding and practical reason so that esthetic judgment involves a harmonious unity of understanding and imagination. In this way, Kant gave aesthetics a central, mediating role in his philosophical system.

What Marcuse drew from Kant was that aesthetics offered a way of overcoming the division between certain antinomies or contradictions – not only between practical and theoretical reason, but also between "sensuousness and intellect" and "desire and cognition," or the head and the heart. As Marcuse put it, "To Kant, the esthetic dimension is the medium in which the senses and the intellect meet. The mediation is accomplished by imagination, which is the 'third' mental faculty."[14(pp172, 179)]

In the Critique of Judgment, Kant argued that every esthetic act was informed by a sense of hope for the future of humanity – a shared vision of human potential. For Marcuse, the esthetic represents a way of bringing together or harmonizing disparate elements of human capabilities and experiences – of finding "the inner connection between pleasure, sensuousness, beauty, truth, art, and freedom."[14(p172)]

For Schiller, the focal reference text was his Letters on the Esthetic Education of Mankind,[18] first published in 1795. Schiller considered this long essay – comprising 27 letters addressed to his patron – his most important theoretical work. Strongly influenced by Kant's third critique, Schiller expounded a vision of a more fully developed human personality, characterized by a balanced and harmonious development of all its facets. Schiller also emphasized the impulse to play and display, which he thought underlies all artistic activity. The esthetic impulse could create a "joyous kingdom of play and of semblance, in which man is relieved of the shackles of circumstance, and released from all that might be called constraint, alike in the physical and in the moral sphere."[18(p215)]

Through artistic production, the deformation of the personality that Schiller observed in contemporary social life could be overcome, and psychic reunification and integration could be achieved. In Schiller's view, "Art is a daughter of Freedom," which should boldly soar "above our wants and needs" and "the exigencies of matter."[18(p7)] Schiller's work on aesthetics was a constant source of inspiration for Marcuse, and Marcuse's analysis of art drew heavily on it.[14(pp180-196)]

The implications of Schiller's esthetic philosophy were also political, although these aspects were not elaborated in great depth by Schiller himself. In Jameson's assessment, Schiller's, "is not primarily an esthetic, but rather still a political system, and that the importance of beauty consists, for him, in the possibility the esthetic experience affords – a practical apprenticeship for the real political and social freedom to come."[19(p90)]

According to Schiller, works of art evoke a type of emotional rehearsal of life within a new potential social configuration, as well as prompting social change:

- In art, consciousness prepares itself for a change in the world itself and at the same time learns to make demands on the real world which hasten that change: for the experience of the imaginary offers (in an imaginary mode) that total satisfaction of the personality and of being in the light of which the real world stands condemned, in the light of which the Utopian idea, the revolutionary blueprint, may be conceived.[19(p90)]

These esthetic theories of Kant and Schiller, emerging out of the German philosophical tradition, had a deep impact on Marcuse's thinking about the esthetic and were incorporated into all his philosophical works from the 1950s through the late 1970s.

4. Sociopolitical role of the arts reimagined

Essentially, Marcuse saw the role of the arts as working on and with the human imagination to create a shift in consciousness that would prepare the ground for social and political transformation. The arts would, by turns, express, stimulate, and guide the imagination and consciousness toward the possibilities of a new world of freedom. To adopt the phraseology of the period, he saw the arts as having a powerful role to play in "consciousness-raising." Marcuse saw signs around him that a "new sensibility" was already emerging – including within artistic production – and he envisaged the arts as promoting and accelerating this developing awareness. In placing such an emphasis on the arts, Marcuse was going against the grain of much of traditional Marxist theory, which tended to regard such esthetic approaches as an "intolerable deviation."[13(p52)] In this respect, it is significant to note that the subtitle of Marcuse's last book was Toward a Critique of Marxist Aesthetics.[1]

Marcuse's theorizing about the nature of art emphasized its subjective, individual, and emotional aspects, which he saw as the source of its subversive, radical political potential: "the need for radical change must be rooted in the subjectivity of individuals themselves, in their intelligence and their passions, their drives and their goals."[1(pp3-4)] Marcuse thought of art as offering a *promesse du bonheur* (promise of happiness), borrowing the phrase from Adorno, who took it from Stendhal. The demand for human happiness – including sensuous pleasure – was a fundamental component of Marcuse's thinking. He rejected asceticism and valorized consumption rather than simply production, again challenging the tendency of much previous Marxist theorizing. As Marcuse saw it, by preserving the promise of happiness, art can recall struggling humanity to the need for social change.[1(p69)]

Marcuse did not give specific parameters or a blueprint for the future development of the arts – preferring instead to grant artists the freedom to follow their imaginations and interests. However, he did offer one clear indication – a tendency he foresaw as a strong trend in the arts of the future. Given the technological and scientific basis of emerging social and political configurations, Marcuse's vision for the development of the arts positioned them in closer touch with science. He envisaged the arts as bridging the growing gap between arts and science, to which Snow[20] had called attention with his concept of the "two cultures."

In Marcuse's view, one effect of a "liberated consciousness" would be the freeing of science and technology to serve the "life instincts" rather than act against them. According to Freud's psychoanalytic theory, the "life instincts" – or Eros – encompass sexual and reproductive drives, instincts of self-preservation, and, more broadly, the pursuit of pleasure and avoidance of pain. This realignment of science in support of the life instincts would require a radical transformation in how science is practiced: "In order to become vehicles of freedom, science and technology would have to change their present direction and goals; they would have to be reconstructed in accord with a new sensibility – the demands of the life instincts."[13(p18)]

Science and technology would then coalesce with the arts in the service of consciousness-raising, overcoming harmful divisions and antinomies within the human personality: "Technique would then tend to become art, and art would tend to form reality: the opposition between imagination and reason, higher and lower faculties, poetic and scientific thought, would be invalidated."[13(p24)] Marcuse identified this combination of artistic sensibility and scientific intelligence as the creation of an "esthetic ethos," where "the sensuous, the playful, the calm, and the beautiful become forms of existence and thereby the *Form* of the society itself."[13(p25)]

Looking at the role of the arts more broadly, Marcuse recognized the part that the arts could play in cultural and cognitive disruption, particularly through unconventional forms of social protest. Reflecting on the

social and cultural developments of the late 1960s – such as "happenings," spontaneous "events," artistic performances, and demonstrations – he celebrated the "often bizarre forms" of protest generated by the student movement, the civil rights movement, the women's movement, and the counterculture more generally. Even these, in his view, were not merely superficial or trivial phenomena, as many assumed at the time. They were significant, he thought, because they "quite frequently make the absurd reasonableness of the Establishment, and the anti-heroic, sensuous images of the alternative more transparent than the most serious argument could do."[13(p60)] Whereas the Frankfurt School has often been criticized for being hostile to popular culture, Marcuse saw that the antinomian, anarchistic tendencies of the popular protest movements often took on "weird and clownish forms" that had the ability to "get on the nerves of the Establishment."[13(p63)]

Satire, irony, and "laughing provocation" became essential elements of political activity – a way of demonstrating contempt for the deadly *esprit de sérieux* (spirit of seriousness) of institutionalized politics. In the spirit of rebellion, the protest movements revived the "desperate laughter and the cynical defiance of the fool" to challenge the reigning social system and dominant order of values.[13(p64)] Although the Frankfurt School has often been characterized as hostile to popular culture – and in that sense, as cultural elitists – Marcuse embraced these popular forms of artistic activity.

The one artistic practitioner and theorist to whom Marcuse continually referred in his writings on aesthetics was André Breton. Breton was an influential French artist and intellectual with a commitment to promoting both surrealism and Marxism. Taking inspiration from the work of Sigmund Freud, Breton advocated tapping into the unconscious through dreams and free associations, and pioneered the technique of "automatism" – acts of spontaneous, unconstrained expression in writing, painting, and drawing. Marcuse viewed Breton, and the surrealism he promoted – especially in the 1920s and 1930s – as the classic exemplar of artistic movements working toward the formation of a "new sensibility."[13(p31)]

Like Benjamin,[21] Marcuse – in his early work on the arts – placed a high value on surrealism, both for its disruptive qualities and its theoretical contributions. These included Breton's concept of *hasard objectif* – the notion that our everyday chance encounters with objects are made meaningful and seemingly mysterious by the investment of unconscious psychic energy. Marcuse extended this idea to signify the creation of a new material reality that would embody, or make objective, human desires, faculties, and esthetic sensibilities.[13(p31)]

Despire Breton's misogyny, Marcuse acknowledged the role that both Breton and surrealism played in inspiring the student revolts, particularly in Paris in 1968.[13(p22)] The "Great Refusal" was a term that Marcuse borrowed from Breton to refer to the popular rejection of "the rules of the game that is rigged against them."[13(p6)] The Great Refusal – which Marcuse often emphasized by capitalizing the phrase – is "the protest against unnecessary repression, the struggle for the ultimate form of freedom."[14(p149)] This phrase was used repeatedly by Marcuse and came to be closely associated with his name.

In addition to surrealism, Marcuse highlighted the disruptive potential of a range of new artistic developments – particularly their ability to interrupt received patterns of thought and challenge existing sensibilities:

- Non-objective, abstract painting and sculpture, stream-of-consciousness and formalist literature, twelve-tone composition, blues, and jazz: these are not merely new modes of perception reorienting and intensifying the old ones; they rather dissolve the very structure of perception in order to make room – for what? The new object of art is not yet "given," but the familiar object has become impossible, false.[13(p38)]

In the poetic arts, Marcuse cited the work of Baudelaire, Rainer Maria Rilke, and Paul Valery. In An Essay on Liberation, Marcuse emphasized the importance of blues and jazz as forms of cultural critique.[13(p38)] This assessment distinguished his views from those of Adorno, whose hostility to jazz was unremitting.

New trends in the arts could even amount to a challenge of "anti-art" – "the eruption of anti-art in art has manifested itself in many familiar forms: destruction of syntax, fragmentation of words and sentences, explosive use of ordinary language, compositions without score, and sonatas for anything."[13(pp41-42)]

However, in accordance with the logic of the dialectic, Marcuse then turned to a critique of some of these emerging trends within the arts: "Yet, this entire de-formation is Form: anti-art has remained art, supplied, purchased, and contemplated as art."[13(p42)] This theme of the recurring recuperation or reincorporation of anti-art or avant-gardist trends into the arts by the existing art establishment, and within a wider commercialized economy of profitability, was to become a central preoccupation of Marcuse's last book, The Esthetic Dimension, where he was more critical of surrealism alongside other avant-garde art forms.[1(ppxi,37)]

Marcuse was critical of the art of Andy Warhol, for example, seeing it as both a "renunciation of the esthetic form" and as enmeshed in the "prevailing art industry and its heteronomous art."[1(pp50-53)] This brought Marcuse closer

to the position of his Frankfurt School colleague, Theodor Adorno, who tended to be skeptical of the enduring revolutionary potential of unconventional forms in the arts, underlining instead their ability to become assimilated over time into mainstream culture.[22] As Adorno put it, "it is a mockery how the increasing merchandise character of culture estheticizes it for utility's sake," as capital, under the compulsion to expand its investments, transforms the products of the artistic spirit into property.[23(pp394-395)] Despite these misgivings and caveats about the commercialization of some forms of artistic expression, Marcuse continued to be optimistic about the radical potential of the arts in their roles as both cultural sabotage and prophecy of future emancipation.

5. Potential criticisms of Marcuse's theories

Marcuse's critics have sometimes raised objections to his theories concerning the arts, especially for their alleged instrumentalism and utopianism. It could be objected, to take the first criticism, that Marcuse's theorizing of the role of the arts in social change adopted an instrumental approach to the arts. It could appear that Marcuse's approach represented a gross and potentially dangerous departure from any idea of "art for art's sake" toward didactic art, and it is true that at times his discourse bears traces of a social engineering agenda. But this reproach would go too far, for Marcuse favored a development and shift of artistic values and tastes originating from the bottom up, from the grassroots of society. His argument was that the existing world of the arts already had an ideological role to play, directed by the powerful forces of the existing capitalist status quo. Marcuse recognized "the mark of social repression, even in the most sublime manifestations of traditional culture."[13(pix)] As noted above, Marcuse was adamant that the choice of subjects and techniques should be left to individual artists. In addition, he valorized a multitude of diverse artistic forms. Therefore, to argue that Marcuse, as a Marxist, was advocating interference with the free play of artistic life would be naïve or disingenuous.

As for the charge of utopianism, there can be no gainsaying the fact that many of Marcuse's ideas – most notably in Eros and Civilization[14] and An Essay on Liberation[13] – had a utopian cast. Marcuse did not deny this. In An Essay on Liberation, written in a mood of optimism immediately before and after the upsurge of student protest in Paris and elsewhere in 1968, he nevertheless acknowledged that his vision of a future free, non-repressive society was "no more and no less than a hope."[13(p71)] Although utopian, Marcuse's thought was never unrealistic or Pollyanna-like. His vision, for example, of a post-scarcity economy of abundance – or at least material sufficiency – is perhaps easily dismissed as unattainable. However, it has long been the promise of modern science, from the early days of Descartes' Discourse on Method and Bacon's New Atlantis, to enable lives of comfort and leisure by replacing the burdens of toil with machine production.[24(p145)] Marcuse's utopianism has prompted, and no doubt will continue to lead many to denigrate his social thought. However, Jameson raised pertinent points when he asked rhetorically, in regard to our tendency to judge against utopianism:

- What if our judgment were itself a measure and a symptom of our own incapacity to support such thinking, of our own repression of the principle of futurity, smothered under the realism of the reality principle and the massive weight of what is? What if it were the very psychologism, the cynical reductionism, of the reality principle itself that turned out to be not reality, but just another symptom?[19(p90)]

In other words, there is the distinct possibility that the rejection of utopianism is itself ideological – a sign and symptom of our immersion in and subjection to the existing systems of thought. Lukács underlined the important functions of utopian thought, writing that a utopian perspective serves a double function – enabling "the artist to portray the present age truthfully without giving way to despair," while also allowing her to "go beyond the mere affirmation of existing conditions, to explore values not found in present society."[25(p61)]

As Marcuse himself put it, the "relegation of real possibilities to the no-man's land of utopia is itself an essential element of the ideology of the performance principle."[14(p150)] There has often been in the Marxist tradition, in particular, an entrenched strain of contemptuous disdain for utopian thinking. In Marx's classic analysis – as in those of many of his followers in the Marxist lineage – "utopian thought represented a diversion of revolutionary energy into idle wish-fulfillment and imaginary satisfactions."[19(pp110-111)] Yet, as Jameson[26] stressed – and as he explored in much of his own work – the utopian idea "keeps alive the possibility of a world qualitatively distinct from this one and taking the form of a stubborn negation of all that is."[19(p111)] In Old Gods, New Enigmas, Davis listed the resources potentially available to enable the political left to confront the contemporary challenges of rising inequality, authoritarianism, and climate change: "insurgent communities, pirate technologies, bootlegged media, rebel science, and forgotten utopias."[27(p202)] Marcuse's utopian writings are hardly forgotten, given the recent revival of academic interest in them, but they represent a significant resource that could be more frequently and thoroughly accessed by the artistic community and their supporters, as well as by the political left.

6. Conclusion

The affective potency of Marcuse's work has emerged as a compelling area of focus. Especially in Eros and Civilization and An Essay on Liberation, Marcuse's writing has the effect of inspiring a joyful response, a sense of relief, and a feeling – or at least a hope – of freedom. His style of writing and composition is notable for its emotive impact and its appeal to the reader's imagination. In these dark days of global neoliberal ascendancy, with the continual reiteration of the inevitability of scarcity, economic rationalism, inequality, and globalization, these affective qualities are more necessary than ever. As Deleuze put it succinctly in his reflections on the contribution of the affects to empowerment and disempowerment: "Sadness will be any passion whatsoever which involves a diminution of my power of acting, and joy will be any passion involving an increase in my power of acting."[28] To sustain continued action – whether in the realms of politics, aesthetics, or academic discourse – turning to and immersing oneself in the thought of intellectuals like Marcuse plays an important role. Echoing the words of Jameson on Marcuse and other utopian thinkers, this study concludes that "it pleases me for another moment still to contemplate the stubborn rebirth of the idea of freedom,"[19(p116)] the "irrepressible revolutionary wish."[19(p159)] In this sense, Marcuse's philosophical works can contribute to fulfilling the inspirational and hopeful role that he envisaged for the arts as a whole.

Acknowledgments

None.

Funding

None.

Conflict of interest

The author declares no conflicts of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

To dwell in the house of god: The self-production and self-consumption of space

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Abstract

Contemporary architectural discourse often prioritizes material permanence and formal completion, overlooking how spatial meaning dynamically emerges through lived events. Challenging this paradigm, this study employs a tripartite hermeneutic/phenomenological methodology – visual deconstruction, mythological-historical criticism, and ethnographic hermeneutics – to argue that architectural space materializes through event-based "dwelling" rather than static structures. Analyzing four cases, we demonstrate how spaces self-produce through curated incompleteness, while ideological completion destroys their capacity to be dwelt in. Behzad's *Beggar at the Mosque Gate* (1489) redefines sacred space through insurgent dwelling – by ignoring ablution rites and prayer times, the beggar exposes architecture as an existential negotiation rather than a ritual container. Conversely, the Tower of Babel's geometrically perfected ziggurat precluded dwelling by reducing human agency to mechanical execution, while Constant's New Babylon became "undwellable" through its frictionless abstraction, erasing resistance essential to lived space. The Great Mosque of Djenné, however, sanctifies imperfection via annual "*crepissage*" – a communal plastering ritual where decay and renewal coalesce, embodying Heidegger's "fourfold" (earth, sky, mortals, divinities) through cyclical labor. Our findings reveal that spaces thrive as "mnemonic ecosystems" when embracing the Zeigarnik Effect: Djenné's unfinished walls and Behzad's open-ended visual narrative compel engagement, whereas Babel and New Babylon's ideological completeness fossilizes meaning. This duality challenges contemporary preservation – United Nations Educational, Scientific and Cultural Organization's "mummification" severs Djenné's "chain of memory," while its ritual adaptation sustains resilience through collective "dwelling-in-decay." We conclude that spatial vitality depends on "architecture as event," where meaning arises through harmony with transience (mud, cracks, erosion), epistemic humility (resisting ideological finality), and embodied acts (plastering, transgressing, storytelling). For contemporary spatial production, Djenné's model – spaces that "breathe, bleed, and are reborn" – offers an antidote to Western permanence fetishes: To dwell is to participate in imperfection; to build is to surrender to time. Future practice must cultivate "dwellable" spaces through events, not monuments.

Keywords: Babylon; Issue of completion; Dwelling; Event architecture; Phenomenology

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Citation: Dündar Z, Demirel E. To dwell in the house of god: The self-production and self-consumption of space. *Arts & Communication*. 2026;4(1):025170028.
doi: 10.36922/AC025170028

Received: April 25, 2025

Revised: June 21, 2025

Accepted: July 17, 2025

Published online: July 30, 2025

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1. Introduction

This study fundamentally repositions architectural discourse by arguing that space transcends physical dimensions and formalist constraints, emerging instead as a phenomenological construct dynamically constituted through temporal events and embodied practices. We propose that spatial meaning is not embedded in inert structures but continuously regenerated through lived experiences – a mental building process where cultural memory and social rituals intersect. This framework bridges hermeneutic interpretation and spatial phenomenology, challenging materialist paradigms while prioritizing embodied perception over geometric abstraction. Crucially, we introduce the "Zeigarnik Effect"[1] – a psychological principle where incomplete tasks occupy persistent cognitive space – as a lens to understand how "spatial incompleteness" fuels architecture's self-production.

Like Zeigarnik's unfinished tasks, architecturally incomplete spaces – those permitting reinterpretation and adaptation – linger in collective consciousness, compelling engagement across generations. This cognitive persistence transforms physical voids or ephemeral structures into enduring "mnemonic ecosystems." Behzad's[1] 15th-century miniature[2] of a beggar transgressing mosque ritual, the Tower of Babel's mythological fragments, and Constant Nieuwenhuys' unrealized *New Babylon* (1959 – 1974) exemplify this: Here, Behzad's pictorial space, though materially absent, thrives as a mental construct through artistic and ritualistic re-engagement. Its power stems not from formal perfection but from curated incompleteness – gaps that invite participatory meaning-making.

Our tripartite methodology – visual deconstruction, mytho-historical criticism, and ethnographic hermeneutics – interrogates four cases:

(i) Behzad's miniature (c. 1489) freezes a transient event (the beggar's ritual subversion) into enduring spatial consciousness, demonstrating how painterly narrative sustains spaces beyond physical decay.

(ii) The Tower of Babel, through its biblical collapse, exposes architecture's paradox: Ideological completion accelerates obsolescence. It's prescribed "perfection" consumed spatial potential, rendering it conceptually "complete" yet existentially inert.[2]

(iii) New Babylon's utopian blueprints (1959 – 1974) reveal a foundational paradox: Though theoretically embracing incompleteness, its failure originated in *"conceptual totalization."* Constant's obsessive modeling of "play" as a mechanized variable – documented in his 1974 manifesto *New Babylon: An Urbanism of the Future* – effectively predetermined creative freedom, reducing "*homo ludens*" to algorithmic behavior. As Wigley[3] observes in Constant's *New Babylon: The Hyper-Architecture of Desire* (1998), "The very act of comprehensively representing dynamic space petrified its potential."

(iv) Djenné Mosque's annual "*crepissage*" (French: Plastering) ritual embodies intentional incompleteness. By ritualizing decay, it transforms erosion into sacred memory, fusing Heidegger's "fourfold" (earth, sky, mortals, divinities) with communal labor.[4]

These cases form an epistemological spectrum: From representation (Behzad) to myth (Babel), speculation (New Babylon), and lived practice (Djenné). Djenné serves as our phenomenological linchpin – its clay walls resist Western preservation dogmas through cyclical rebirth.

Bluma Zeigarnik's study demonstrated that interrupted tasks are recalled 90% more accurately than completed ones – a cognitive bias termed the "Zeigarnik Effect."[1] We adapt this principle to spatial theory, arguing that:

(i) Incomplete spaces (Djenné's cracked facades, Behzad's open-ended narrative) act as cognitive irritants, provoking continuous mental reconstruction. Their unresolved states generate mnemonic tension, ensuring cultural transmission.

(ii) Complete spaces (Babel's conceptual finality, New Babylon's frictionless utopia) induce cognitive closure. Their ideological perfection terminates engagement, triggering spatial consumption.

This dichotomy underpins our core thesis: Spaces "self-produce" when embracing incompleteness but "self-consume" when pursuing totality. Djenné's plastering ritual actualizes this – each erosion fissure demands communal re-engagement, while the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s

[1] Behzād (born c. 1455? Herāt, Khorāsān—died c. 1536?, Tabrīz, Azerbaijan) was a major Persian painter whose style as a miniaturist and role as a teacher were vital to the development of Persian Islamic painting. Orphaned at an early age, he was raised by the painter Mīrak Naqqāsh in Herāt, where he became head of the Herāt academy in 1486, a position he held until 1506. *Encyclopedia Britannica*. Published February 15, 2024. Accessed January 9, 2025. https://www.britannica.com/biography/Behzad.

[2] The term "miniature" originates from the medieval European practice of manuscript illumination, known as "*miniatura,*" in which red-orange pigment ("*minium*"—also called red lead powder or "leech") was used to embellish the initial letters of chapters. Initially, the term meant "painted with leech;" but over time, it became associated with the Latin word "*minor*" (small) and came to refer to a small picture or illustration. Kluge F. *Etymologisches Wörterbuch der Deutschen Sprache*. Berlin-New York: de Gruyter; 1975:480.

preservation attempts sever the "chain of memory"[5] by imposing artificial finality.

Mental construction is rooted in the embodied experience of space as an event, where the essence of architecture lies in experiential acts. Following Merleau-Ponty[6] *Phenomenology of Perception*, spatial knowledge emerges through corporeal dialogue: The beggar's feet on mosque stone, Djenné's mud-smeared hands, Babel's absent steps. This rejects Cartesian dualism, positioning space as:

(i) Temporal: Meaning accrues through event sequences (prayer times ignored, plaster reapplied).
(ii) Haptic: Walls "speak" through texture – cracks inviting touch, polished surfaces repelling it.
(iii) Collective: Behzad's miniature gains life through viewership; Djenné's walls through communal labor.

The mind constantly (re)builds these spaces. Babel exists not as a ruin but as a cautionary metaphor; New Babylon, as a critique of modernist determinism. Their mental persistence – fueled by incompleteness – validates Henri Lefebvre's[7(p.83)] assertion: "Space is a mental and social fact."

The wisdom of Djenné offers radical alternatives to culturally homogenized cities; spaces must breathe, bleed, and be reborn. This perspective shifts architectural practice toward an event-centered understanding, bringing forward specific principles for the future of design. Epistemic humility advocates rejecting the dogma of completion in favor of embracing spatial fluidity. Event protocols propose moving beyond static preservation toward cyclical renewal. Cognitive openness encourages the creation of narrative and structural voids that allow for communal ownership. As demonstrated by the beggar's year-long occupation of the mosque, dwelling begins where the rules of architecture end.

2. Methodological framework

This study employs an interpretive-phenomenological lens to reconceptualize architectural space as a "temporal event" rather than a physical artifact. Rejecting Cartesian mind–matter dualities, we draw on Heidegger's[8] concept of "dwelling" – where space emerges through lived engagement – and Lefebvre's[7] spatial triad, which frames architecture as a dialectic between conceived, perceived, and lived dimensions. Our approach prioritizes hermeneutic depth over empirical metrics, arguing that spatial meaning crystallizes through disruptions to expected functions: The beggar's transgression in Behzad's miniature, Babel's ideological collapse, or Djenné's ritualized decay.

2.1. Interpretive foundations

Three interconnected hermeneutic modes guide our spatial exegesis:

(i) Visual phenomenology decodes Behzad's *Beggar at the Mosque Gate*. The beggar's intrusion – bypassing rites[9] – transforms sacred space into a site of existential negotiation. His act of dwelling subverts architectural determinism, privileging lived presence over ritual formalism.
(ii) Mytho-historical critique examines the Tower of Babel as a conceptual ruin. Its biblically prescribed function[10] as a "completed" ideological monument accelerated spatial obsolescence. Physical fragmentation became inevitable once human agency was reduced to mechanistic roles.[2]
(iii) Ethnographic hermeneutics interprets the Djenné Mosque's "*crepissage*" ritual. The annual plastering ceremony embodies Heidegger's "*building–dwelling–thinking*" triad: Communal labor fuses material decay with sacred memory, making impermanence a theological praxis.[4]

Unlike quantitative methods that measure static forms, our methodology traces "contextual resonance" – how spaces retain cultural meaning through reinterpretation.

2.2. Analytical mechanics

Our analysis progresses through three phases, each anchored in phenomenological theory:

(i) Event disruption: We identify ruptures in spatial function, such as the beggar's violation of mosque protocols. Heidegger's "*ereignis*"[11(pp21-35,247)] (event of appropriation) illuminates how such interruptions reveal space's ontological fluidity – where meaning is seized, not given.
(ii) Mnemonic reuse: We trace cultural re-signification, exemplified by Babel's metamorphosis from architectural failure to a metaphor for hubris. Pierre Nora's "*lieux de mémoire*" (sites of memory) theory explains how ruins gain new life as collective symbols.[12]
(iii) Ontological flow: We map resistance to spatial closure, as seen in Djenné's cyclical rebirth. Lefebvre's "differential space" – zones that evade dominant power structures – clarifies how the mosque's ritualized decay defies Western preservation paradigms.[7]

This triad reveals space as a "*palimpsest*": Each erasure or intervention adds layers of meaning.

2.3. Epistemological position

We ground our inquiry in Pallasmaa's[13] "*haptic epistemology*": Spatial knowledge is felt through the

unfinished dialogue between event and form. This rejects architecture as a fixed product, asserting instead that:

(i) Ideological completion consumes space: Babel and New Babylon failed because pre-defined functions nullified the dwelling's improvisational nature. Babel's ziggurat prescribed human movement like machine parts; New Babylon's frictionless utopia eliminated resistance, rendering it "undwellable."[14]

(ii) Curated incompleteness enables dwelling: Behzad's beggar repurposed ritual space through insurgent occupation, echoing the Quranic edict that "mosques belong to God"[15] – not institutional gatekeepers. Djenné's plastering ritual became a "festival of becoming" where collective labor transcends worship, actualizing Heidegger's maxim that only what is incomplete – what makes us capable of dwelling – can truly dwell.[8(p157)]

Thus, spatial vitality emerges from "managed imperfection" – an epistemic humility that accepts architecture as a perpetually unfolding event.

3. Subjects of study

3.1. Behzad's miniature: Beggar at the mosque gate

Behzad's *The Beggar at the Mosque Gate* (1489) in Figure 1, functions not merely representationally but as a hermeneutic arena where architecture and narrative converge. The miniature's intricate ornamentation – particularly the geometric arch vaulting and the figures' garments – is not decorative excess, but spatial signification, marking sacred hierarchy.[16] Most significantly, Behzad creates tension between stasis and dynamism: While the mosque physically reflects Islamic architectural principles ("*qibla*" orientation, ablution areas), the beggar's phenomenological intervention destabilizes its meaning.

This story, adapted from Sa'di's *Bustan* (Cairo MS Adab Farsi 908), serves as a hermeneutic key by visually articulating the literary text. It interrogates the spatial system, enables reinterpretation, and in doing so, establishes an ontological foundation:

> An outwardly humble yet inwardly resolute elder (the beggar figure) seeks refuge in the mosque. Rejected by an institutional authority figure ("This is no place for beggars!"), he retorts: "If not for people, whose house is this?" He enters and proclaims: "I shall not return empty-handed from God's gate." He dwells there for a year, and on his deathbed whispers: "He who knocks on God's door, it shall be opened for him."[9]

This narrative interweaves the mosque's physical architecture with the emotional and spiritual dimensions

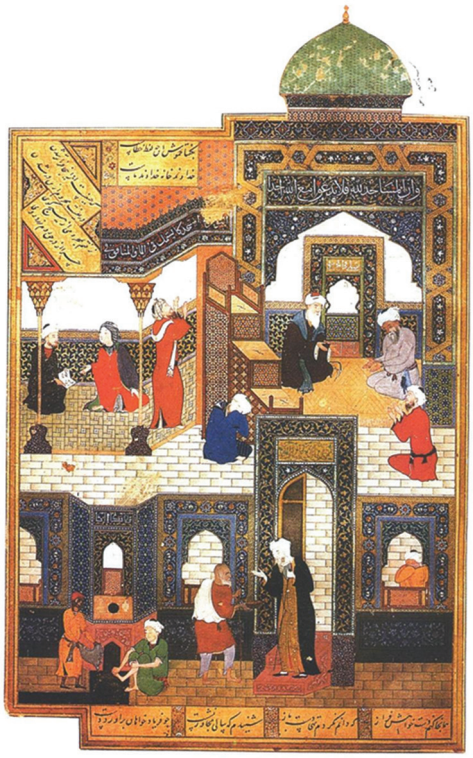


Figure 1. Kemaleddin Behzad. *The Beggar at the Mosque Gate*. 1489. Miniature. Original work in manuscript of Sa'di's *Bustan* (Cairo: General Egyptian Book Organization, Ms. Adab Farsi 908).
Source: Barry, MA. *Figurative Art in Medieval Islam and the Riddle of Bihzad of Herat* (1465 – 1535). Paris: Flammarion; 2004:200.

of human experience, highlighting Behzad's ability to transform static visual forms into dynamic storytelling and reflective spaces. Thus, the story operates on three levels:

(i) Literal: The beggar's necessitated physical occupation of sacred space.

(ii) Symbolic: Babylon as "*Bāb-ili*" ("Gate of God")[17] – where worldly struggle meets divine sanctuary.

(iii) Phenomenological: Space reconstituted through insistent lived presence rather than ritual conformity.

The concluding line of Sa'di's story, "He who knocks on God's door, it shall be opened for him,"[9] is profoundly symbolic, signifying the beggar's ultimate sanctuary within God's house – a refuge from the turmoil of hunger, homelessness, and destitution. This concept parallels the beggar's metaphorical journey seeking solace in "*Bāb-ili*":

In Akkadian, the name "Babylon" is etymologically linked to the phrase "gate of god" ("*bāb*" [gate] + "*ili*" [of god]). The city's name first appears in Akkadian texts from the late third millennium Before Common Era, though its founding likely predates these references. Initially known in Sumerian as "*Ka-dingir-ra*" (where "*ka*" = "gate," "*dingir*" = "god," and "*-ra*" = possessive suffix [of]), this

Sumerian name was later adapted into Akkadian as "*Bāb-ilim*" (Babylon).[17]

This linguistic and symbolic nexus between the story's setting and Babylon's historical-cultural context enriches the narrative, intertwining the beggar's plight with the spiritual and historical weight of seeking divine sanctuary at the metaphorical "Gate of God."

Within the context of spatial agency, this miniature reflects the symbolic essence of the architectural processional plan, which intrinsically represents a journey of spatial and spiritual progression. Aligned toward the "*qibla*" – a unifying, faith-centered direction – it traces movement toward the "*mihrab*." This architectural narrative mirrors ritual progression, beginning with the "*muezzin*"'s daily call to prayer, which guides the congregation toward the courtyard's center, where symbolic purification rites occur. The white courtyard pavement emerges as a consecrated zone for spiritual cleansing, offering metaphorical release from the burdens of worldly existence.

The spatial journey depicted in the miniature directs both the figures and the viewer's gaze toward the "*mihrab*" as the focal point, symbolizing the initial stage of worship. While architectural "spatial agency" facilitates experiential insight, the primary prayer hall, transitional pathways, and peripheral furnishings create interstitial zones. These spaces mediate between the dynamic urban fabric and the sacred interior, gradually intensifying the sense of seclusion and spiritual focus as one approaches the structure.

The miniature's visual composition accentuates this narrative. The dark beige path extending along the garden wall symbolizes the outermost zone adjacent to the courtyard. It connects to the mosque via the garden gate – a transitional boundary separating the chaotic urban landscape from the courtyard's ordered tranquility. The courtyard gate, meanwhile, regulates access and reinforces the threshold between external disorder and internal sanctity.

Traditional mosque courtyards typically feature fountains that consolidate movement toward the center and anchor the space upon entry. Behzad's depiction of the fountain, however, introduces an interpretive divergence: Its form appears inverted and exposed, as if revealed within an unenclosed structure. This inversion invites the viewer to reinterpret the purification process. Tracing the schematic architectural navigation line in this miniature reveals the cleansing ritual – an indispensable prelude to worship – strategically positioned just outside the entrance gate, underscoring its preparatory significance before entering the sacred interior.

Viewed from this perspective, it is evident that individuals enter the mosque only after completing the purification ritual – a pre-requisite for spiritual entry. Following ablution, worshippers proceed through an auxiliary gate into the mosque, penetrating deeper into the sacred space. The "*mihrab*," a symbolic portal within the mosque, facilitates the continuation of their spiritual journey. This meticulously designed spatial sequence creates a rhythmic flow through narrow passages, low doorways, and a series of steps, establishing an intentional progression from the external world toward the heart of the mosque.

Transitions between the street, courtyard, arched colonnade (portico), celestial courtyard, entrance narthex, and central dome exemplify rigorous planning and intentionality. Each zone serves as a transformative stage in the journey toward the mosque's interior. The prayer hall – a critical component of this journey – functions as a preparatory space, accessed via a winding path that subtly guides worshippers into a state of contemplation and readiness.

Behzad's paintings offer insight into the spatial organization of such environments, revealing a clear hierarchy between central and peripheral zones. A sequence of spaces extending from the urban periphery to the mosque's interior symbolizes a gradual detachment from the anxieties and distractions of daily life. This transition not only emphasizes physical distance from the chaotic city but also underscores the spiritual transformation required to enter the prayer space, offering a sense of sanctuary and focus.

Spaces within the miniature are comprehensively and purposefully arranged to provide viewers with a cohesive, immersive experience. This is achieved through Behzad's approach to space and architecture, characterized by a kind of "architectural promenade." While the miniature centrally organizes space, the architectural journey is meticulously constructed through the sequential arrangement of spaces. Each zone carries both visual and symbolic significance, contributing to the overarching narrative. This non-homogeneous progression culminates in a choreographed spatial movement that guides the viewer's gaze and experience.

This miniature features 12 figures. Behzad notes that 11 adhere to specific protocols governing mosque entry. In contrast, the beggar challenges traditional norms associated with this act. The narrative depicts an elderly man – identified as a beggar – attempting to enter the mosque with unshakable faith in divine benevolence. The miniature shows him approaching without performing ablution at the designated fountain. However, another figure – a self-appointed authority – blocks the mosque's entrance, attempting to dissuade the elder from entering.

Though the story does not explicitly state this individual's level of religious conviction, his well-groomed attire and headgear suggest a superficial adherence to doctrinal principles. Behzad's emphasis transcends ritual formalities, underscoring that worship is not merely a performative act but requires spiritual depth and sincerity. Despite the admonishing figure at the entrance, Behzad inscribes a Quranic verse above the main portico: "The mosques belong to God, so do not invoke anyone alongside God."[15] This inscription accentuates the narrative's core theme of authentic spiritual devotion, reinforcing the idea that true worship transcends external appearances and ritual compliance.

Sa'di's story emphasizes values of generosity, faith, and hope over rigid formalities. It implies that pre-planned or standardized religious behavior may restrict spiritual openness and suppress unpredictability. The elderly beggar's journey toward the mosque is depicted as incomplete, contributing to the narrative's sense of ambiguity and interpretive openness. He does not wait for prescribed prayer times nor dress according to mosque conventions. Instead, he advances toward the Tower of Babel (salvation) constructed in his own mind. According to the narrative, the beggar lived in the mosque with faith and hope for a year, ultimately passing away there. Sa'di suggests the beggar's unwavering hope and faith led him to a more mature state of mind, attaining a level of understanding inaccessible to others. Thus, he alone could reside within the symbolic Tower of Babel. Ultimately, he transformed the mosque into a dwelling – a revolutionary act in its own right. Through hope and faith, the beggar "dwelt" ("*wohnen*") in the mosque in the Heideggerian sense, for he built it, and thus, he lived within it.

3.2. The Tower of Babel: Ideological completion as spatial failure

The city of Babylon, often envisioned as a metaphor for humanity's aspiration to create an idealized paradise, reflects the desire to build a perfect sanctuary in the image of God. This utopian vision manifested in a complex architectural ensemble, including lush gardens and the iconic tower, symbolizing humanity's yearning to recreate the lost Eden. The metaphor of Paradise, as an idealized space free from negative elements, implies no need for shelter or protection. In such a realm, external threats or vulnerabilities are absent, rendering the very concept of dwelling unnecessary.

Rykwert[18] challenges traditional interpretations, suggesting that the absence of a house in heaven, as described in the Bible, is not a literal omission but rather a misreading influenced by the text's presentation of a perfect space. Harries,[19] on the other hand, raises a compelling counterpoint: Why would a house in heaven be necessary at all? He posits that Adam and Eve, residing in their serene and sheltered garden, had no need for such a structure within the bounds of their idealized existence.

However, according to prevailing beliefs, the expulsion of Adam and Eve from Paradise necessitated the construction of a dwelling on Earth. This need was not merely but symbolic; an effort to reconcile with the imperfections of the mortal world. Through human ingenuity and labor, the act of building became a means of addressing these flaws, completing and transforming the environment into a secure refuge. This process illustrates humanity's enduring endeavor to recreate safety and belonging in a world marked by uncertainty and imperfections.

Hegel asserts that the initial impetus for the emergence of art and architecture stems from humanity's recognition of nature's deficiencies and inadequacies. According to this perspective, the raw and unrefined state of the natural world compels human beings to transform and complete it consciously.[20] By imposing order, meaning, and purpose, humans reshape their surroundings to align with their needs and ideals.

One of the most profound and defining characteristics of humanity is its capacity to transform knowledge and, through this transformation, reconfigure both the physical and metaphysical realms. This transformative capacity does not merely enhance nature; it also addresses perceived gaps and deficiencies. The concept of nature's "incompleteness" serves as a foundational premise in this discussion, implying that spatial forms and events are inherently unfinished and require human intervention and reinterpretation to achieve a sense of coherence and meaning.

Framing art and architecture as responses to nature's perceived inadequacies underscores the intrinsic relationship between human creativity and the spaces we inhabit. This relationship positions construction as an aspiration to bridge the gap between the ideal and the real, reconciling human desires with the conditions of existence.

The city and Tower of Babel, referenced in both the Old and New Testaments, as shown in Figure 2, have long captivated artists and intellectuals, particularly during the Renaissance. While this study does not seek to explore the motives behind Babel's construction or the subsequent linguistic fragmentation of humanity, the narrative provides a foundation lens for interpreting the symbolic significance of the structure.

The Old Testament recounts: "Then they said, 'Let us build ourselves a city,' and they said, 'Let us build ourselves

a tower that will reach to the heavens and make a name for ourselves. So that we may not be scattered over the face of the earth.'"[10] In this context, the Tower of Babel embodies humanity's ambitious attempt to achieve unity and permanence through ingenuity. However, the outcome reflects a failure reflected in human hubris. This failure illustrates the broader theme of the consequences of arrogance and overreach, a narrative echoed throughout interpretations of the story over time.

This raises a provocative question: Was it truly God who left the Tower of Babel in ruins, or was the downfall the result of the idealized design of the "ziggurat" itself? The structure, with its top floor symbolically reserved for the deity and planned in seven ascending levels, was meticulously designed down to every detail.[21] In this sense, the building reflected a pre-determined order in which the actions of its users were strictly dictated and constrained. The notion of an idealized, divine architecture – intended to mirror heaven's perfection – paradoxically imposed such rigidity that it lacked flexibility and adaptability. It demanded unwavering adherence to form and function. As such, the Tower of Babel was a building that was "complete," yet its very completeness may have hindered its ability to fulfill its symbolic purpose, raising the question of whether the structure's downfall resulted from the perfection it aimed to embody.

3.3. Ritual impermanence as theological praxis: The Great Mosque of Djenné

The Great Mosque of Djenné embodies a radical proposition in architectural theory: That decay can be sacred. Unlike the Tower of Babel's pursuit of permanence, this earthen sanctuary – the world's largest mud-brick structure – embraces its ephemerality through an annual resurrection ritual that transforms vulnerability into communal sacrament. As the Niger River floodwaters recede each spring, Djenné becomes a living theater where devotion materializes in clay-smeared hands. Elder mason Amadou Cisse articulates this ethos: "We don't just repair walls; we renew our covenant with the divine."[22] This "*crepissage*" ritual transcends maintenance to become what theologian Brown[23] describes as "tactile liturgy" – where matter and meaning merge through collective labor.

The architectural logic of Djenné's Great Mosque transforms material vulnerability into spiritual resilience through its dynamic relationship with decay. Its sunbaked "*banco*" walls, reinforced with palm-wood "*toron*" ribs, weather Mali's extreme climate – where torrential rains sculpt gullies into facades and "*harmattan*" winds etch intricate cracks across surfaces. Rather than resisting this natural erosion, the structure embraces it as a theological imperative, echoing Heidegger's principle that true building must acknowledge the transience of dwelling.[8(p150)] Each fissure becomes a summons for communal renewal, materializing the Islamic ethic of "*istikhlaf*" (human stewardship of creation)[24] through collective plastering rituals that bind earthly impermanence to sacred continuity.

As shown in Figure 3, the "*crepissage*" unfolds through organic phases rather than rigid stages. The ritual's cyclical nature stems from the community's constant motion. Weeks before the event, elders examine wall fissures while children gather rice husks for mortar. Women prepare ritual foods, such as "*dege*" porridge sweetened with wild honey, embodying cross-class solidarity.[25] This preparatory tension mirrors psychologist Zeigarnik's[1(p307)] observation that unfinished spatial conditions heighten communal awareness.



Figure 2. Pieter Bruegel the Elder. *The Tower of Babel*. Oil on oak panel. Source: Kunsthistorisches Museum, Vienna. Accessed February 23, 2024. https://www.khm.at/en/objectdb/detail/323/.



Figure 3. Malians participate in the annual replastering of the Great Mosque of Djenné, Mali. Photograph published May 15, 2024. Source: 12Punto. Accessed April 2, 2024. https://12punto.com.tr/yasam/afrikanin-tac-mahali-djenne-ulu-cami-onarildi-36705.

At dawn on the day of "*crepissage*," thousands of community members – including masons, farmers, and merchants – form human chains to transport water from the Bani River. This collective action embodies the Islamic ethic of communal responsibility, exemplified by Imam Ousmane Diakité's teaching that spiritual merit comes from sharing burdens rather than accumulating wealth.[26] The ritual creates a socially egalitarian space where bankers and beggars work side by side, manifesting what urban theorist Lefebvre[7] described as the transformative power of collectively produced space – lived space.

This is a sensory theology. Teams climb scaffolding, pressing banana-fiber-reinforced mud onto walls with bare hands. The mosque's iconic pinnacles – "*mihrab*" minarets symbolizing Islam's Five Pillars – are reshaped by master masons chanting, "Allah is the light of heavens and earth…."[27] This choreography induces what psychologists Nakamura and Csíkszentmihályi term "collective flow" – a trance-like fusion of labor and worship.[28]

By contrast, UNESCO's 2016 suspension of "*crepissage*" to prioritize material integrity ignited community protests over the severing of spiritual continuity.[29] As anthropologist Marchand[4(p132)] observes, the plastering ritual is Djenné's heartbeat; its cessation represents cultural suffocation. This conflict exposes a fundamental dichotomy: Western preservation petrifies architecture as an artifact, while Djenné's people sustain it as a living practice through embodied renewal.

Ultimately, Djenné's endurance as Africa's oldest continuously maintained sanctuary stems from its rejection of completion dogma. Where Babel's architects sought immortality through geometric perfection, Djenné's custodians accept decay as divine pedagogy. The mosque thus embodies Zeigarnik's principle at a civilizational scale: By remaining perpetually unfinished, it compels communal re-creation across generations.[4(p148)]

3.4. New Babylon project

Constant Nieuwenhuys' New Babylon project, conceived between 1959 and 1974, presents a speculative vision of a utopian world in which creativity and play supplant labor as the defining human activity. This ambitious architectural concept reimagines space, functionality, and habitation by proposing a dynamic environment – perpetually incomplete, mutable, and collectively shaped – designed to accommodate the shifting needs and desires of its inhabitants. Central to Nieuwenhuys' vision is the idea of "*Homo Ludens*,"[30] or "playing man," liberated from traditional societal constraints and thriving in a space that prioritizes adaptability and creativity.

Rooted in the principles of unitary urbanism, New Babylon envisions a city composed of modular structures and interconnected "zones," analogous to the situationist concept of neighborhoods. These spaces, equipped with mobile and reconfigurable elements, are intended to foster a perpetually evolving environment where hierarchy and permanence are rejected in favor of fluidity and impermanence.[30] This speculative society assumes the emancipation of humanity through automation, where individuals are freed from the drudgery of production to engage in boundless leisure and collective creativity. As such, New Babylon stands as a direct critique of capitalist ideologies and the deterministic tendencies of modernist architecture, advocating for a spatial experience defined by human agency rather than pre-defined functionality.

However, Nieuwenhuys' vision also invites critical reflection on its feasibility and implications. Heynen[14] highlights the conceptual inconsistencies and practical challenges inherent in the project, noting the absence of tangible representations to substantiate its claims. Although Nieuwenhuys asserts that "the true architects of New Babylon will be the Babylonians themselves," this notion is not fully realized in the project's models. Instead, Nieuwenhuys shifts toward exploring New Babylon's essence through speculative artistry – drawings and paintings that emphasize its conceptual framework over physical implementation.[14(p160)]

This transition underscores the philosophical tension at the heart of New Babylon: The interplay between order and chaos, permanence and transience, control and freedom. Through its speculative design, visible in Figure 4, the project raises profound questions about the



Figure 4. Constant Anton Nieuwenhuys, *Ode à l'Odeon,* 1969. Oil paint and lacquer on canvas. Created in Amsterdam. Object number: 334673. Kunstmuseum Den Haag, on long-term loan from Fondation Constant. Photograph by Tom Haartsen. Accessed January 9, 2023. https://www.kunstmuseum.nl/nl.

nature of human habitation: Can a perpetually evolving space offer greater fulfillment than one that is fixed and complete? Does the process of continuous creation hold more significance than the structure itself? Constant's visual representations further accentuate these tensions, evoking an underlying sense of ambiguity and unease. The fragility of utopian ideals suggests that the enduring power of New Babylon lies in its incompleteness – a paradoxical yet profound statement on the nature of dwelling and human creativity.

Hilde Heynen also identifies key inconsistencies in Constant's work on *New Babylon*, particularly regarding the tension between the concepts of autonomy and collectivism. She argues that while Constant's use of singular figures may align with the idea of autonomy, this is at odds with the collective foundation upon which New Babylon is built. Heynen views Constant's work as a definitive vision for a post-revolutionary era, but she also perceives contradictions between this idealized vision and the realities of the period. It is possible that, through her extensive research on *New Babylon*, Heynen recognized that the realization of such a utopia was ultimately unfeasible due to the inherent complexities of human nature.[14,p.169] She articulates this position in the following way: The conviction in revolutionary change and the potential for genuine human transformation was a hallmark of the intellectual climate of the 1960s, from which *New Babylon* emerged. However, this perspective overlooks the insights of that very era, what Foucault[31] referred to as the "micrology of power." Such an approach fails to consider the intricate interconnections between the fundamental structures that underpin social systems and the psychological processes that shape individual behavior.

The concept of *New Babylon*, which promises infinite freedom and quality leisure time by attributing dynamic qualities to its various spaces, ultimately gives rise to a dystopian environment marked by feelings of loneliness, confusion, and disorientation. This occurs because the spaces are designed with no boundaries, leading to emptiness and uniformity. The lack of distinctive character in Constant's universally designed spaces has become a subject of architectural criticism, evoking comparisons to critiques of the international style. In her analysis of Constant's final representation of *New Babylon*, *Terrain Vague*, Heynen argues that the work illustrates that New Babylon is, in fact, "undwellable."[14(p175)]

Heynen emphasizes the impossibility of materializing the utopian vision of New Babylon, suggesting that its failure lies in the coexistence of both dystopia and utopia, success and failure. She argues that while humans strive for the pinnacle of societal advancement, the intrinsic limitations of human nature – combined with the ever-evolving dynamics of social, economic, environmental, and technological forces – render the achievement of a true utopia an elusive pursuit. Despite its contradictions, Heynen suggests that the allure of New Babylon stems precisely from these tensions.

4. Findings and discussion

In this study, we created a debate that reveals a fundamental dialectic in architectural ontology – spaces that embrace "event-driven incompleteness" foster authentic dwelling, while those pursuing "ideological completion" invite existential collapse. Across Behzad's miniature, Babel's ruins, Djenné's cyclical rebirth, and New Babylon's speculative utopia, we witness how spatial meaning emerges not from perfected forms but from the friction between human action and mutable structures.

4.1. Behzad's spatial rebellion

Behzad encodes spatial rebellion through four compositional strategies that subvert architectural determinism. The fountain – traditionally a purification tool – is overturned, its ritual function bypassed. The garden gate, designed as a transitional threshold, becomes a breached boundary allowing urban chaos to infiltrate sacred space. The Quranic inscription ("The mosques belong to God")[15] serves as an ironic counterpoint to the exclusionary figure blocking entry. Most radically, the beggar – ostensibly a peripheral non-worshipper – occupies the compositional center, visually aligned with the "*mihrab*."

These elements manifest Heidegger's "*bauen wohnen denken*"[8] (building-dwelling-thinking):

(i) Building occurs through the beggar's year-long occupation, reconstructing the mosque's purpose;
(ii) Dwelling emerges as he rejects ablution rituals, asserting authentic presence over formal piety;
(iii) Thinking crystallizes in his dying words – "God's door opens to the seeker"[9] – dismantling spatial hierarchies.

In literary narrative, Sa'di; visually, Behzad arranges this rebellion as follows: The inverted hierarchy marginalizes 11 obedient figures while placing the beggar at the center; the temporal collapse in the narrative freezes only his entrance and death, skipping ritual intervals. He enters the mosque without regard for specific prayer times. Temporary materiality is symbolized by the flickering candle flame, reflecting the event-related meaning of the space.

The Babylonian resonance ("*Bāb-ili*" = "Gate of God")[17] transforms the mosque into a transhistorical heterotopia. Like Babel's interrupted ascent, the beggar's "unfinished" journey – bypassing purification, ignoring prayer

times – collapses sacred/profane binaries. Both spaces derive meaning from desire, not completion.

This creates a phenomenological promenade that subverts Cartesian ideals:

> Where traditional practice demands
> Street → Gate → Courtyard → Prayer zone → (5 times a day, at pre-determined times), the beggar forges
> Street → Direct Entry → "*Mihrab*" → Year-long dwelling.

Key deviations include:

(i) Compressed thresholds (perforated gate, displaced fountain);
(ii) The "*mihrab*" re-signified as the nucleus of the dwelling, not the terminus of ritual;
(iii) Bodily purity replaced by spiritual resistance;
(iv) Interstitial zones suspending sacred/profane classification.

The Zeigarnik effect further validates this ontological incompleteness – interrupted spatial actions create cognitive retention, making unfinished events more memorable. Here, Behzad presents architecture not as a solved equation but as a lived question – meaning germinates in the gap between rule and practice. The beggar's revolutionary act exposes the hypocrisy of exclusionary sanctity, proving that space belongs to authentic dwellers. In this lies Behzad's legacy: Spatial democracy, where true worship flourishes not in perfect forms, but in resilient spaces of dwelling.

4.2. Babel's tyranny of completion

The Tower of Babel epitomizes architecture's most seductive fallacy: That perfection can be designed into existence. Unlike Djenné's participatory becoming, Babel's ziggurat imposed ideological finality – a monument to humanity's ontological contradiction where divine perfection was pursued through architectural hubris. While Djenné embraces cyclical rebirth and Behzad's beggar embodies phenomenological openness, Babel manifests what Gaus terms "the tyranny of the ideal,"[32] fossilizing utopian aspirations into oppressive forms. Its seven-tiered structure, meticulously planned with the "*gigunu*" (summit shrine) reserved for divine encounter, reveals the paradox – physical incompleteness masked ideological completion.

The tower's incompleteness was existential, not structural – its design pre-supposed a finished cosmic order that reduced human agency to mechanical execution. This inverted Hegel's insight that architecture emerges from negotiating nature's "incompleteness," instead imposing regimented closure. The result was Lefebvre's "abstract space," detached from lived experience. As Pallasmaa observed, spaces that pre-determine all actions permit performance but preclude dwelling. Bruegel's painting inadvertently critiques this flaw: Chaotic scaffolding swarms with disconnected laborers, foundations crumble mid-construction, and the absence of collective purpose exposes how "finished" designs invite entropy.

Heidegger's fourfold further reveals Babel's dissonance:

(i) Earth was denied through human-made bricks replacing stone;
(ii) Sky was monopolized in the conquest of celestial realms;
(iii) Mortals became instruments, not dwellers;
(iv) Divinities were confined to a caged shrine, not a threshold.

Thus, the collapse was ontological – "No thing can dwell where the fourfold is fractured." Where Behzad's beggar achieved sanctuary through inhabiting incompleteness (bottom-up appropriation, narrative temporality, transgressive agency), Babel's builders conflated structural completion with existential fulfillment, yielding ruins of ideological collapse. Its legacy endures as a cautionary event: Spaces aspiring to perfection become uninhabitable, while those embracing imperfection – like Djenné's mutable mosque – sustain life for centuries.

4.3. Djenné's wisdom of decay

Here lies the revolutionary counterpoint: Where Babel sought immortality, Djenné sanctifies transience. The annual "*crepissage*" ritual embodies Zeigarnik's principle that incompleteness compels engagement. Djenné Mosque's deterioration is not a flaw but theology materialized – an architectural acknowledgment of human finitude. While Babel's ziggurat pursued immortality through geometric rigidity, Djenné celebrates mortality through fluid form. Yet this ritual faces existential threats from modern conservation paradigms. The Aga Khan Foundation's well-intentioned interventions – cement stabilizers, suspended plastering – misunderstand the mosque's ontology, just as UNESCO's preservation mandates treat the structure as an artifact rather than an event. For Djenné's people, halting "*crepissage*" severs Hervieu-Léger's "chain of memory,"[5] disrupting the tactile transmission of faith across generations. The cracks in the walls are not defects but invitations; the eroded surfaces are palimpsests awaiting reinterpretation.

This cyclical incompleteness generates profound cognitive resonance. As Bluma Zeigarnik observed, unfinished tasks linger in memory with visceral urgency. Djenné's ritual embodies this through phases: Anticipation (children tracking flood calendars for communal feasts), collaboration, climax (the mosque glistening under the Harmattan sun), and suspension (immediate decay priming the next cycle). This perpetual "not-yet-finished" state mirrors Behzad's beggar – both reject completion

to sustain meaning. Djenné materializes Saint Bernard's wisdom that "true sanctuary lies in unmediated nature," dissolving boundaries between earth and worship. Clay from ancestral riverbanks, water from seasonal floods blessing the mortar, and palm wood scaffolding breathing with humidity literally embody Heidegger's fourfold: Earth, sky (prayer calls), mortals (community), and divinities (Quranic inscriptions).

Djenné subverts Western preservation dogmas. Where Babel's ruins signify failure, Djenné's erosion signals vitality. Each plaster layer represents Tim Ingold's "correspondence" – a dialogue between maker and material. The mosque evolves organically – French colonial reconstruction (1907) flattened its fractal complexity; Aga Khan's restoration (1996) standardized windows, disrupting ventilation; community-led replastering (2024) reintroduced curvilinear buttresses. These adaptations reveal architecture as a verb – a continuous negotiation between tradition and contingency. Ultimately, Djenné offers salvation for an age obsessed with permanence. Its walls whisper: To dwell is to participate in decay. While Babel's architects fled mortality, Djenné's custodians embrace it – their cracked hands molding a sanctuary that breathes, bleeds, and rebirths itself. Like Behzad's beggar transforming space through obstinate presence, Djenné's community sanctifies imperfection through collective care. In a world of climate collapse and cultural erasure, this mosque testifies: True resilience lies not in resisting change but yielding to it – one handful of mud at a time.

4.4. New Babylon's paradoxical cage

Finally, Nieuwenhuys' New Babylon emerges as a haunting paradox – a visionary critique of capitalism that inadvertently replicates the very determinism it sought to dismantle. Conceived amid post-war optimism, its modular megastructures promised liberation through play: Labyrinthine platforms suspended above the earth, where walls shifted on rails, colors mutated with mood, and "*Homo Ludens*"[30] would sculpt space like clay.

Yet this utopia contained its own dystopia. As Heynen discerned, the project's fatal flaw lay not in ambition but in its ideological completeness. By pre-determining all human activity as creative play, New Babylon denied the messy realities of rest, conflict, and mundane ritual – realities essential to dwelling.

Constant's sketches reveal an unsettling truth: Fluidity became tyranny. To inhabit New Babylon meant surrendering to perpetual curation – walls reconfiguring by abstract "*derive*" rather than need, zones morphing through algorithmic whim instead of communal consensus. This echoes Foucault's "micrology (microphysics)[31] of power" – freedom so meticulously engineered that it calcifies into control. The absence of thresholds erased spatial anchors, inducing topological disorientation – the loss of cognitive maps that root us in place.

Unlike Djenné's tactile clay or Behzad's pigment-stained parchment, *New Babylon* existed only as ink or plastic models. This abstraction proved prophetic when Constant designed *Terrain Vague*, unconsciously acknowledging failure through derelict lots beneath the megastructure. These "vague terrains" symbolized ignored human needs: The desire for grounding and imperfect boundaries. As Heynen observed, true dwelling requires resistance – surfaces that push back and spaces that remember – qualities absent in New Babylon's frictionless planes.

Its kinship with Babel is uncanny: Both prized conceptual perfection over lived experience, reduced inhabitants to ciphers, and collapsed under ideological weight. Yet while Babel asserted divine authority, New Babylon fetishized human agency into erasure – freeing citizens from labor only to imprison them in endless self-reinvention. Heidegger's warning went unheeded – New Babylon violated the fourfold by severing earth with steel platforms, obscuring sky with decks, denying mortals refuge, and banishing the sacred. This explains the spectral figure adrift in Constant's painted voids. Ultimately, New Babylon's legacy lies in productive failure – by exposing the limits of architectural determinism, it vindicates Djenné's wisdom. Spaces thrive through curated incompleteness – not control. Where Djenné's crumbling plaster invites touch, New Babylon's pristine modules repel; where the beggar's intrusion deepened meaning, Constant numbed through enforced novelty. New Babylon endures not as a blueprint but as a cautionary poem – the dream of absolute freedom is dwelling's greatest threat.

5. Conclusion

This study has fundamentally reconceptualized space not as a static artifact but as a dynamic, event-driven phenomenon – a mental construct continuously reproduced through human engagement. By liberating architectural discourse from materialist and formalist constraints, we reveal that spatial meaning emerges not from perfected forms but from the "friction" between mutable structures and lived events. Our tripartite methodology – visual deconstruction, mytho-historical critique, and ethnographic hermeneutics – demonstrates that spaces thrive through curated incompleteness, while those pursuing ideological completion invite existential collapse.

Behzad's beggar and the Great Mosque of Djenné exemplify space as a self-generating phenomenon – a

mental construct continuously reshaped through lived engagement. The beggar's transgressive dwelling subverts ritual determinism, exposing architecture not as a static solution but an existential question. His defiance of prayer times transforms sacred space into a site of negotiation, where human agency disrupts pre-defined order. Similarly, Djenné's ritualized "*crepissage*" – the annual renewal of its cracked clay – materializes imperfection as theology. Here, erosion becomes sacred: Communal labor embraces decay, embodying Heidegger's fourfold (earth, sky, mortals, divinities) by weaving human finitude into regenerative care.

In stark contrast, Babel and New Babylon consume themselves through rigid idealism. Babel's ziggurat imposed a "completed" cosmic hierarchy, reducing human dwelling to mechanistic compliance, while New Babylon's frictionless utopia erased resistance and memory. Their ruins stand as heterotopias of failure, where pre-determined meaning suffocates inhabitation. Unlike these projects, self-producing spaces thrive through embeddedness in events: Djenné's plastering festival and Behzad's miniature endure as cognitive architectures precisely because they harness the Zeigarnik Effect – unfinishedness compels engagement. Babel's artificial completeness, however, fragmented cultural memory by denying process.

Djenné thus challenges preservation dogma. UNESCO-style mummification severs the "chain of memory;" true resilience emerges through collective rituals that yield to change. Heidegger's triad – "*bauen*" (building), "*wohnen*" (dwelling), "*denken*" (thinking) – finds radical expression here; space flourishes when rules are disrupted, not obeyed. In an age of climate collapse and cultural homogenization, Djenné's model – spaces that "breathe, bleed, and are reborn" – offers salvation from the Western fetishization of permanence. The beggar's obstinacy, Babel's rubble, Djenné's cracks, and New Babylon's ghosts all declare – architecture lives only when incomplete. To dwell is to participate in decay. Future practice must cultivate events, not preserve objects – one handful of mud, one transgressive act, one ritual at a time. Space, in its essence, is an event.

Acknowledgments

None.

Funding

None.

Conflict of interest

The authors declare that they have no competing interests.

Author contributions

Conceptualization: All authors
Formal analysis: Zeynel Dündar
Investigation: Zeynel Dündar
Methodology: Emre Demirel
Writing – original draft: Zeynel Dündar
Writing – review & editing: Emre Demirel

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Data used in this work are available from the corresponding author upon reasonable request.

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

"Big surveys" caught between policies, sociology, and statistics: Measuring cultural participation in national territories

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(This article belongs to the *Special Issue: Art and territories*)

Abstract

In many countries, "big surveys" on cultural participation are now part of the landscape. Yet they are rarely considered as subjects of study. Necessary for cultural policies, eagerly awaited by the media, and readily used by the social sciences, the national surveys carried out by governments on the cultural activities of their populations are a blind spot in the analysis. This article proposes taking a closer look at the measurement of cultural participation in different national territories. Its corpus comprises around 40 European countries, 15 of which have such a "big survey." The analysis describes the origins of these surveys in the 1960s, in the context of the emergence of cultural democratization policies. It identifies the unexpected variety of statistical approaches used in different countries to capture attendance at cultural institutions, amateur activities, and media practices, often indirectly, avoiding a single, costly survey on the subject of cultural participation. Among the 15 "big surveys" identified, the article examines the diversity of institutional frameworks and methodologies used, highlighting their impact on the results, their representativeness, and their range. It investigates their denominations and, above all, the scope and type of activities covered by these surveys, which vary considerably from one country to another. Ultimately, these "big surveys" reveal how participation in the arts and culture is apprehended in various national territories and, consequently, how their measurement is conditioned by cultural policy paradigms—their symbolic territories—and, finally, about what they do not measure. In conclusion, the text considers the pertinence and the future of these "big surveys."

Keywords: National surveys; Cultural participation; Cultural policies; Cultural statistics; Cultural sociology; European comparison

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Citation: Moeschler O. "Big surveys" caught between policies, sociology, and statistics: Measuring cultural participation in national territories. *Arts & Communication*. 2026;4(1):025270063. doi: 10.36922/AC025270063

Received: June 30, 2025

Revised: August 7, 2025

Accepted: August 15, 2025

Published online: September 4, 2025

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1. Introduction

Surveys of cultural participation have been part of the cultural landscape in Europe for more than 50 years. In the wake of the cultural democratization project outlined in the 1960s, they have become an essential tool for measuring inequalities in access to culture and, hopefully, for improving that access. With the rise of evidence-based cultural policy, these surveys have become even more important. Finally, the COVID-19

pandemic has confirmed the strategic role of quantifying cultural activities for politicians and decision-makers. It is therefore legitimate to take a closer look at the "big surveys" of different countries on cultural participation and their methods, breakdowns, and definitions, to better understand what these reading grids allow us to grasp or, on the contrary, what they miss.[1]

The centrality that national surveys of people's cultural activities have acquired is directly related to the growing importance of the audience in both policies and the measurement of culture. In what is probably the first (and only) systematic survey of European cultural participation, in 2012, from which this article is partly inspired, it is stated that the cultural practices of the population "are, without doubt, the most important dimension of the cultural sector." Audiences are even described as the "*raison d'être*" of different art forms: "Performing arts without an audience; music without listeners; museums without visitors or books without readers will all lose their '*raison d'être*' and soon cease to exist."[2 (p227)]

It has not always been this way: Since the post-war period, art has tended to chase the audience away,[3] busy innovating artistically and bringing forward singular creators,[4] helped by policies to support the avant-garde against the market,[5] or even by subsidizing artistic subversion.[6] At the same time, since the 1960s and 1970s, it has been chasing after the audience in another sense of the word: Art, and, above all, its policies, are on its heels, trying to interest it to bridge the gap between culture and cultural policy on the one hand, and the general public on the other.

As we shall see, there are nowadays several reasons for this quest for audiences. In this context, it is up to the "big surveys" to measure, at the national level, the state of attendance at cultural institutions among the country's population, and its evolution through the repetition of the approach. However, despite their widespread political use, the media attention they attract and their contribution to research, including sociological research, these "big surveys" are rarely analyzed. Located in the bosom of official statistics and benefiting from the aura of the supposed objectivity of figures, yet figures are not neutral technical objects but social facts.[7] "Big surveys" on cultural participation are a blind spot in analysis.

Opting for a comparative territorial approach, we present here a "sociology of quantification"[8] of cultural participation, through an analysis of national surveys on the cultural activities of their population carried out by European countries, as well as their institutional and discursive production context. Our initial corpus is made up of around 40 countries on the Old Continent, 15 of which have a "big survey" on the subject. Behind the relative standardization brought about by the cohabitation of these national surveys and the Eurobarometers, surveys conducted on the populations of all member countries (four of which to date have focused on culture, the latest in 2017)[1], one discovers specific features and even national survey traditions. This gives rise to a paradox: The objective measurement of cultural practices in figures is applied in very different ways and for sometimes opposed purposes in various territorial contexts.

This article proposes a multi-stage exploration of the "big surveys" on cultural participation. After this introduction, which also presents the research question, Section 2 discusses the history of these surveys, which began around 60 years ago, and whose birth and evolution have been shaped by one country, France, between cultural policy, sociological research, and official statistics. Section 3 addresses the question of the delimitation of our subject: What is a "big survey?" Section 4 analyzes the institutional affiliation of these surveys, revealing their anchoring and their perspective, as well as their methods and their implications for the scope of the results. Section 5 then identifies the central question of the name and, more profoundly, the definition of culture and the activities covered by these surveys, which, beyond a consensual core, vary considerably according to national contexts. Section 6 examines the paradigms behind these surveys as symbolic territories with very different aims, where the arts and culture in their narrower sense are sometimes in second place. Finally, Section 7 concludes with a review of the main results and addresses the questions raised by this analysis.

2. "Big surveys" born between politics, sociology, and statistics

While national surveys on cultural participation are now present in many countries around the world and in a significant number of European countries, their original context is marked by one nation in particular, France, which played a decisive role in their emergence and shaping. This emergence can be seen as ternary: The major

[1] Mandated by the European Commission, these Eurobarometers, very numerous and covering a wide range of subjects, have been held four times to date on the theme of culture: in 2002 (Eurobarometer n. 158: "Europeans' Participation in Cultural Activities"), 2007 (n. 278: "Cultural Values"), 2013 (n. 399: "Cultural Access and Participation") and 2017 (n. 466: "Cultural Heritage"); see https://europa.eu/eurobarometer/surveys/browse/all/series/8924 (last accessed May 10, 2025). Although a European survey on cultural practices is under discussion at Eurostat, no Culture Eurobarometer has been carried out since.

surveys on cultural participation originated in politics and then developed along two opposing but related lines of sociological research and official statistics.

Jean-Louis Fabiani highlighted the decisive role played in France by the political paradigm of cultural democratization, which crystallized in 1959 with the creation of the new Ministry of Cultural Affairs headed by the acclaimed novelist and member of the Resistance during the Second World War, André Malraux. One of his objectives was to "make the major works of humanity, and above all of France, accessible to the greatest possible number of French people," as stated in the Decree creating the Ministry of Cultural Affairs (July 24, 1959). Initially, it is "in the hollow of this ideological and political space that sociologists ask themselves scholarly questions" about cultural practices.[9 (p33)] The result was the book "*L'Amour de l'art*" (The Love of Art) by Pierre Bourdieu and Alain Darbel in 1966. Based on quantified measurements, this study reveals the sociological determinants of museum-going and the role played by the knowledge and recognition of socially unequal "codes" in this "love" of art, now to be put in quotation marks. Commissioned by the Ministry, the book also displays a political ambition: Not only, according to the back cover, does it aim to "subject good taste to the rigors of critical examination." Furthermore, "[b]y highlighting the social conditions of access to cultivated practice, [the book] shows that culture is not a privilege of nature, but that it would be necessary and sufficient for everyone to possess the means to take possession of it for it to belong to everyone."[10(p222)] This first survey marked a short-lived convergence between the three logics—political, sociological, and statistical—behind these surveys, which would later separate.

The study of the population's cultural activities was to develop along two lines that were as important as they were opposed. In 1973, *Les Pratiques culturelles des Français* (The Cultural Practices of the French), the first of a long series of ministerial surveys (six since then), inaugurated the "big surveys" of public statistics, eminently proactive in that they were intended to verify the progress of the cultural democratization that was now underway. In 1979, Pierre Bourdieu published "*La Distinction*" (Distinction), which remains a reference work today, looking more generally at lifestyles by placing them in a deterministic and fatalistic relationship with the space of social positions, a far cry from the optimism of the Malrauxian ideals.[11] While this point of view has had a lasting influence on the "big surveys" on the topic, it also suggests the vanity of this ambition, arguing that cultural practices can only change if the social stratification, of which they are the product, is modified. These two fields subsequently evolved in parallel, while feeding off each other.

On the academic side, a veritable field of research dedicated to cultural practices and lifestyles was emerging. From the outset, it has been closely linked to the analysis of social stratification: What interests scholars is not so much art or culture (or even cultural participation) as such, but rather their hidden variations according to social milieu. This field has become internationalized and diversified with, in turn: The discovery in the United States of a growing cultural omnivorism among the elite by Richard Peterson in the 1990s, based on national statistics on the musical tastes of the American population[12]; the multiplication in 1997 of the seven cultural universes under the influence of new variables taken into account, such as age, sex or place of residence, by Olivier Donnat, the mastermind behind The Cultural Practices of the French, who uses the data here originally;[13] the hypothesis of a culture of individuals marked by dissonance sketched out in 2004 by Bernard Lahire, who uses the data from this same survey in conjunction with a hundred or so interviews[14]; or, more recently, the integration of the cultural studies perspective by Hervé Glevarec, whose tablature of tastes makes a sharp reorientation from the verticality of the Bourdieusian model toward greater horizontality.[15] Although it has become autonomous since "*L'Amour de l'art*," following the logic of theoretical chapels and fierce debates typical of scientific fields, this field is nourished by the government surveys that they have helped to initiate.

A veritable matrix and benchmark for all the major surveys that interest us more closely here, even if it is not historically the first, The Cultural Practices of the French digs a different furrow. Conducted by the forerunner of Department of Studies, Forecasting, Statistics and Documentations (DEPS), the current *Département des études, de la prospective et de la statistique* located within the French Ministry of Culture, this survey is part of a public statistics rationale that is both independent and whose statistical reason is intimately linked to nation states, their birth and their political management.[16] This set of surveys is characterized by an absence of overly explicit references to the sociological theory from which it derives: Responding to a political demand, they aspire to be produced according to the rules of the statistical art alone. As the product of policies, they are ultimately intended to serve as a neutral support for informed decisions, as well as for political and public debate (rather than sociological debate, incidentally). Although originally related to sociology, they must be as detached from it as possible, while still being usable by researchers, as we have seen.

This political and sociological lineage is demonstrated by the fact that the socio-demographic standard that characterizes all the "big surveys" studied, without exception, includes the trio of gender, age, and level of

education. The level of education as a determining factor—one of the key findings in Bourdieu's "*L'Amour de l'art*"—thus constitutes a norm in these surveys. It is not only a widespread variable but also always expressed in a standard, ternary fashion, following the pattern of compulsory, secondary, and tertiary education. This variable is not insignificant; it acts as a metonymic indicator of cultural capital, determining cultural practices, a distant legacy of Pierre Bourdieu, and an indicator of the sociological roots of these surveys.

The "big surveys" of official statistics have continued along the institutional path mapped out by The Cultural Practices of the French, while accommodating changing cultural policy paradigms. The measurement of cultural participation has spread to almost all European countries, whether as a "big survey" in the strict sense of the term, or as derivatives and alternatives. Therefore, we should first define the "big survey" on the subject.

3. Definition of "big survey" in national variations

We should now define our subject, first in geographical terms. The proposed focus is on the European countries, a territory that is both circumscribed and varied, allowing for revealing contrasts.[2] Our population will therefore include 41 countries, consisting of the European Union (EU) member countries (currently 27), the 10 candidate countries, the four European Free Trade Association countries, including Switzerland, and the United Kingdom (UK). The list of countries covered, together with the surveys, statistics, documents, and other national websites consulted, is included in the Appendix.

In seeking to identify the national approaches that form the "big survey" of cultural participation, we are interested in which countries quantify the cultural and leisure activities of their populations. This can be achieved using methods other than a single large-scale survey. There are no solid boundaries for "big surveys" that define a survey as "big" or even a study as "survey." The criteria, such as minimum sample size, questionnaire scope, thematic range, regularity, or historical duration, for a survey on cultural participation to be defined as "big" remain unavailable. An investigation based on several small data collections or the secondary use of data may also be considered as a "survey." We have chosen to focus on countries with a single survey on cultural participation of a certain scale and/or longevity, while simultaneously taking an interest in all the other scenarios in between. These national gradations and combinations are also central to our theme's interest.

This leads us to approach our subject differently. Not all countries have a "big survey" on cultural participation conducted among their population, because there are more indirect (and less expensive) ways of approaching the question in figures. In Bosnia-Herzegovina, Croatia, Czechia, Georgia, Greece, Hungary, Iceland, Northern Macedonia, Moldova, Montenegro, Serbia, Slovakia, and federalist Germany, a "big survey" on cultural participation is thus lacking. However, the statistics offices in these countries approach this subject by compiling existing automatic counts, the number of entries, users, uses, or even sales of certain cultural establishments—typically theatres, museums, archives, libraries, bookshops, and cinemas. This way, national figures can be obtained more cost-effectively, as the collection of administrative data from the concerned institutions replaced the tedious survey of the population. However, the analysis based on socio-demographic profile is impossible as the subjects being measured are not people but occurrences, such as ticket sales and use of books, with no information on the authors of these occurrences beyond pre-existing but limited and non-uniform breakdowns (young or senior tickets in museums, for example). It is therefore impossible to describe the demographic profile of users based on these data.[3] Sometimes these limitations are partially compensated for by linking them to demographic figures. For example, in Germany, the number of admissions per 1,000 inhabitants is calculated to establish the orders of magnitude.

Some countries use other types of surveys to obtain figures on cultural participation. Finland employed a "Time Use Survey" in 2021, which is designed to record the amount of time spent on media purposes or certain leisure activities, to obtain the attendance of its population at cultural institutions and events. Bulgaria has extracted some information on cultural participation from its "Adult Education Survey," which covers the 25–64 age group. Some countries benefit from another international "big survey," such as the Survey on Income and Living Conditions (SILC) in EU countries, which has a rotating but relatively rare thematic module (2006, 2015, 2022) on social participation (or, in 2022, quality of life), with some very condensed questions on attendance at cultural

[2] This scope follows logically the one used by Eurostat's European Statistical System network on Culture Task Force on Cultural Participation in its 2012 final report, in its work on surveys in this area, covering 19 countries, including Switzerland and Sweden, and which followed an initial inventory in the year 2000 of the then 15 member countries.

[3] In Bosnia-Herzegovina, the figures on recorded visits are broken down by gender, but based on an estimation, a rare and even unique process in the statistics studied.

institutions.[4] Latvia, Slovenia, Turkey, and Luxembourg, home to Eurostat, cope with this rather limited source. French-speaking Belgium also uses this module, but in addition to a "big survey" on cultural practices. Albania makes a virtue of necessity: On cultural participation, its "Culture Statistics 2022" combines data from the SILC survey with data from another "big survey" on information and communication technologies (ICTs), as well as data on entries.

In several countries, numerous small surveys, or data from different (sometimes "big") surveys on other themes, are used to establish a quantified overview of cultural participation, albeit a heterogeneous one. An emblematic example is the *Cultuurmonitor* in the Netherlands. Compiled by the *Boekmanstichting*, an independent foundation, this long series of results presented on a very comprehensive "culture and participation" webpage is made up of data from several different sources: A biennial "omnibus" survey (i.e., made up of several themes) on the leisure activities of the population aged more than 6 years carried out by Statistics Netherlands, in collaboration with the foundation and the Mulier Institute specialized in research into sport and physical activity, figures on admissions to museums and performing arts institutions available from the statistical office, and figures from associations in the sector on cinema admissions. Cultural participation is just one of the seven themes covered by this cultural monitor, which also describes cultural professionals, financial flows, digital transformation, and sustainable development, thus favoring a broad spectrum. The Netherlands' *Cultuurmonitor* is an example of a tool that is itself "big" for cultural participation, although there is no single "big survey" on the subject. In Austria, various surveys, whether conducted by Statistics Austria or not, provide the basis for an overview of the issue: The "Time Use Survey," the "Household Budget Survey," the EU's SILC survey, and the European survey of ICT use in households. However, a "big survey" was also conducted by a research institute commissioned by the state. Portugal also combines data from several sources: A household survey on internet use, *Inquérito à Utilização de Tecnologias da Informação e da Comunicação pelas Famílias*, with visitor statistics (particularly on heritage), and a module on cultural participation added since 2007 to its survey on adult education and training, *Inquérito a Educação e Formação de Adultos*, on 18–69-year-olds. Last but not least, in France, in parallel to the DEPS "big survey" at the Ministry of Culture, the National Institute of Statistics and Economic Studies (INSEE) publishes more concise results on the cultural practices of the population using, as other countries do, the SILC quality of life module from 2015 and 2022. Moreover, the rare INSEE survey on household expenditure (the last two editions were in 2011 and 2017), and the survey on time use (l'*Emploi du temps*, conducted approximately every 10 years) also provide a better understanding of cultural practices in France through "big surveys" that are not specific to cultural participation but may encompass it.

Sometimes the "big survey" on cultural participation is embedded in an even bigger one. In Poland, the statistical office benefits from the "Household Budget Survey," which includes cultural participation as a detailed module and repeats every 5 years. Above all, in Italy, the publication on "free time and cultural participation" (which is comprehensive, comprising 140 pages) is based on several sources: (i) The household expenditure survey to describe spending on culture—another form of cultural participation or its measurement; (ii) a survey of Italians' daily lives during COVID-19 to describe certain leisure activities, radio/television (TV) subscription statistics, (iii) a survey of "city dwellers and free time," and (iv) "*Aspetti della vita quotidiana*", a monumental survey (carried out each year in 20,000 households, representing 50,000 individuals) in which a "big survey" on cultural participation is virtually imbedded. Conducted by the Italian statistical institute, *Istituto Nazionale di Statistica* (Istat), the latter focuses on the habits of citizens and the problems they face every day and on themes, such as school, work, family life and relationships, leisure, political and social participation, health, lifestyles, access to services, the main cultural outings, media practices, and above all, ICT in detail. In Sweden, the publication on the country's "Cultural Habits" is based on the 28 cultural activities contained in an even larger survey by an institute at the University of Gothenburg, Society, Opinion, Media (SOM) Institute, which aims to describe all of Sweden (according to the SOM presentation online) and therefore focuses on the habits and opinions of the Swedish population in general. This is a borderline case of a "big survey" that is considered "big" because it is part of an even larger, regular survey.

[4] Cf. Eurostat, "Glossaire: *Statistiques de l'UE sur le revenu et les conditions de vie* (EU-SILC)" (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:EU_statistics_on_income_and_living_conditions_(EU-SILC)/fr) and "Income and living conditions. Modules" (https://ec.europa.eu/eurostat/web/income-and-living-conditions/database/modules) (both last accessed on May 10, 2025). The questions in the SILC module relate to visits to three types of institution: cinemas, performing arts (theatre, concerts, and ballet), and cultural sites, a fairly broad category which includes historical monuments, archaeological sites, museums, and art galleries.

At other times, there is a "big survey" on cultural participation, but it is "small" in one way or another. Norway, for example, has been surveying the cultural participation of its population every 2–4 years since 1991, but with around ten activities covered, the "Norwegian Cultural Barometer" is a borderline case of a "big survey," the results of which are only published on a short webpage. Romania's "Cultural Consumption Barometer" is more extensive, producing large-scale publications (over 100 pages for the latest edition), although it started only in 2012. In Switzerland, for historical and political reasons, cultural and leisure practices have only had their own "big survey" since 2014, after an initial prototype in 2008, in connection with the entry into force, belatedly after several unsuccessful attempts,[17] of the first federal law on the promotion of culture in 2012. Here, internet use is the subject of a separate series of statistics on the information society, while media use, already covered by private institutes, is only the subject of secondary statistics at the country's statistics office.[5]

Some countries have a "big survey," but without a "big" publication in the form of a completed, well-defined, extensive document (in PDF format, for example). There are also borderline cases here: In the UK, most of the results of the "Participation Survey" are only published on a long webpage, which is nevertheless called a "report" and structured as such, with appendices and footnotes.[6] Denmark has its own "Cultural Habits Survey"—the oldest identified in this census, starting in 1964—but only publishes some of the results on a short webpage of its statistics office. Internet users are left to visit the Danish "Statbank" for their research and cross-referencing.[18] This is also the case in Estonia, where the results of its "Participation in Culture Survey," conducted regularly since 2015 among 10,000 people, are only published on the webpages of its statistical office and, in Estonian, its Ministry of Culture.[19]

Alongside Austria, French-speaking Belgium, Denmark, Estonia, France, Italy, Norway, Poland, Romania, the UK, Sweden, and Switzerland, which are already mentioned, Spain, Lithuania, and Malta also have a "big survey" on cultural participation, 15 countries in all out of the 41 studied. Ultimately, the "big surveys" on cultural participation depict the administrative and political realities of a country, not only by their presence or absence, but also by their potential for multiplication. In Belgium, two or even three "big surveys" coexist on the subject, or at least approaches that combine the different typologies mentioned. In the Flemish Region, several questions on cultural participation are included by the Flemish statistics office in the regular "Statistics Flanders Survey," while on the French-speaking side, the statistics office Statbel uses questions on cultural and social participation taken from the SILC's rotating module and, last but not least, the *Observatoire des politiques culturelles* (OPC) of the Wallonia-Brussels Federation conducts a specific survey every 10 years on the cultural practices and consumption of the population in the French-speaking part of the country.

Finally, some countries lack interest in the subject. In Cyprus, tourism statistics are highly developed, but cultural statistics on the national population are lacking. Croatia compiles figures on admissions in cultural institutions. Interest has recently been focused on the rather original question of the public's perception of the creative and cultural industries, leading to a publication on the subject.[20] For these countries, searching the internet for a survey on cultural participation leads to Eurostat's cultural participation page, which, based on the SILC module, allows a comparison between countries, at least periodically and in brief.[21] In Ireland, the statistics relate to specific aspects, such as digital household purchases of culture and travel, as well as access to the arts, culture, and sport for young people in poorer households.[7] The present study did not yield any results for Liechtenstein or Ukraine, where no recent survey on cultural participation could be found. In Kosovo, cultural participation appears to be a new subject, an online survey being currently in progress, named "Perceptions and Attitudes Toward Cultural Activities and Intercultural Cooperation," conducted by a non-governmental organization.

4. Organizations and methods in institutional territories

While following common statistical and methodological principles, the "big surveys" on cultural participation are marked by national differences that reflect their roots in specific territorial and, therefore, social, cultural, and

[5] In Switzerland, however, the first national "*Mikrozensus*" on cultural and leisure behavior was conducted already in 1988 by the Federal Statistical Office with a research institute, following an initial university survey conducted in the French-speaking part of the country in the mid-1970s; though these were isolated initiatives.

[6] In the Netherlands, the long "Culture and participation" page in the Boekman Foundation's *Cultuurmonitor* is also structured like a paper report.

[7] It should be noted that the United Kingdom recently conducted a survey on the cultural participation of adults in Northern Ireland: Government UK, Department for Communities, "Engagement in culture, arts, heritage and sport by adults in Northern Ireland 2023/24", 25.07.2024 (https://www.communities-ni.gov.uk/publications/engagement-culture-arts-heritage-and-sport-adults-northern-ireland-202324, last accessed April 24, 2025).

political realities. For the remainder of the analysis, our study population comprises the 15 countries in which a "big survey" on cultural participation has been identified, including the latest surveys available at the time of writing (May 2025).[8]

The first element to be identified is the institutional framework in which these surveys are located: The organizations conducting these "big surveys." This institutional framework differs from one country to another, denoting a specific relationship each time with politics and cultural policies, which these surveys are, by definition, close to. The analysis reveals five institutional frameworks (Table 1).

The most common institutional framework is official statistics, which account for just under half of the cases studied in six countries. It is followed by Ministries of Culture (three countries), sometimes through an internalized statistical entity, public institutes (two countries), such as observatories, and private institutes, which are found in only one case in our population. A non-negligible group (three countries) consists of mixed configurations, combining several of the previous categories. In detail, the five categories of institutional frameworks are as follows:

(i) Statistics office: In the largest group of countries studied, the "big survey" on cultural participation is carried out by the national statistical office. In Denmark, which has the oldest survey in our population, the survey is conducted by Statistics Denmark, in Italy by Istat, and in Estonia by Statistics Estonia. In Norway, the "Norwegian Cultural Barometer" is produced by Statistics Norway. In Poland, Statistics Poland, in collaboration with the Statistical Office in Krakow, includes a cultural module in the "Household Budget Survey" every 5 years. In Switzerland, the Federal Statistical Office conducted surveys on the population's cultural and leisure practices as part of its thematic surveys, forming part of the federal population census system. In some cases, the survey was previously conducted by the Ministry of Culture before it became independent and was integrated into official statistics.[9]

(ii) Ministry of Culture: In three countries, the Ministry concerned is responsible, directly or (more often) indirectly, for the survey. In the UK, the survey is part of official statistics and is run directly by the Department for Culture, Media and Sports with the

[8] The year after the country name refers to the year of the survey (and not the year of publication, which can sometimes be several years away).

[9] The oldest survey, in Denmark, was conducted before 2018 by the Ministry of Culture, before being integrated into Statistics Denmark (see page "Cultural Habits", https://www.dst.dk/en/Statistik/dokumentation/documentationofstatistics/cultural-habits-survey#:~:text=The%20Cultural%20Habits%20Survey%20is%20an%20interview%20based%20quarterly%20survey,both%20in%20Denmark%20and%20abroad, last accessed May 31, 2025). In Switzerland, the prototype of the current survey was conducted by the Federal Statistical Office in 2008, with funding from the Federal Office of Culture, before the survey was integrated into the general population census system in 2014.

Table 1. Institutional frameworks for "big surveys" of cultural participation in Europe

Institutional framework (number of countries)	Country (year[a]): Survey organization(s)
(i) Statistics office (6)	Denmark (2024): Statistics Denmark Estonia (2023): Statistics Estonia Italy (2022): *Istituto Nazionale di Statistica* (Istat) Norway (2023): Statistics Norway Poland (2020): Statistics Poland and Statistical Office in Krakow Switzerland (2024): Federal Statistical Office
(ii) Ministry of Culture (3)	Spain (2022): Ministry of Culture and Sports, Division for Statistics and Studies France (2018): Ministry of Culture, Department of Studies, Forecasting, Statistics, and Documentation United Kingdom (2023): Department for Culture, Media and Sports and Department for Science, Innovation and Technology
(iii) Public institute (2)	Belgium, French-speaking (2017): Observatory of Cultural Policies Romania (2022): National Institute for Cultural Research and Training
(iv) Private institute (1)	Austria (2023): Institute for Social Research and Consulting (mandated by the Federal Ministry of Arts)
(v) Mixed configuration (3)	Lithuania (2020): Lithuanian Council for Culture, with the Ministry of Culture, commissions two private institutes, *KOG Institutas* and *Norstat* Malta (2018): Arts Council Malta, National Statistics Office (sample), and The Valletta 2018 Foundation Sweden (2023): Swedish Agency for Cultural Policy Analysis (of Statistics Sweden) and Society, Opinion, Media Institute, University of Gothenburg

Note: [a]The year after the country name refers to the year of the survey (and not the year of publication, which can sometimes be several years away).

Department for Science, Innovation and Technology (which has taken over digital policy, also covered by the survey). In the other two cases, a statistical unit within the Ministry is in charge. In Spain, the survey on cultural participation, which forms part of the official national statistics plan, is conducted by the Division for Statistics and Studies of the General Technical Secretariat from the Spanish Ministry of Culture and Sport based on a sample drawn by the Spanish National Statistics Institute. This is the configuration we find in France, where it is the Ministry of Culture, but through the DEPS created in the 1960s. While the survey "*Pratiques culturelles des Français*" has been its flagship product since 1973, its analyses also cover other themes—such as employment and cultural professions, financing of culture, and economics of the cultural industries—and, like an observatory, it also has a mission of documenting, disseminating, and forecasting. It should be noted that the DEPS has a mixed staff, comprising both Ministry employees and statisticians seconded and rotating from INSEE, the national statistical institute.

(iii) Public institute: In two countries, an independent body linked to the cultural administration is in charge of the survey, while also having other duties. In French-speaking Belgium, it is the OPC of the Wallonia-Brussels Federation, a government department with autonomy, which conducts a specific survey on the cultural practices and consumption of the population in the French-speaking part of the country every 10 years. At the same time, the observatory has the task of drawing up, for the area of the Wallonia-Brussels Federation, inventories of other dimensions of the cultural field (institutions, professionals, etc.), compiling documentation, providing analyses and decision-making assistance on cultural policy issues, and even supporting academic research with award and grants. In Romania, the National Institute for Cultural Research and Training, affiliated with the Ministry of Culture, conducts the survey. Its objectives are to study, research, and supply statistical data in the field of culture, as well as to provide ongoing training for cultural professionals.

(iv) Private institute: In one country within our corpus, it is a private institute that conducted the "big survey" on cultural participation, commissioned by the administrative body responsible for cultural policy. In Austria, the private institute, Institute for Social Research and Consulting, commissioned by the Federal Ministry for the Arts, Culture, Public Service, and Sport, conducted the 2023 survey.

(v) Mixed configuration: In three countries, the survey results were obtained from the joint efforts of several players. In Lithuania, the survey was commissioned by the Lithuanian Council for Culture, which formed a working group with the Ministry of Culture, and two private institutes, *KOG Institutas* and *Norstat*. In Malta, the 2018 survey was commissioned by the Arts Council Malta in collaboration with the National Statistics Office and The Valetta 2018 Foundation, in line with the city being named European Cultural Capital 2018.[10] Finally, in Sweden, the Swedish Agency for Cultural Policy Analysis in Gothenburg, in collaboration with the SOM Institute at the University of Gothenburg, produces a publication on cultural participation, based on the SOM survey; the agency is part of Statistics Sweden and is mandated by the State.

Based on the list of countries that comprise each type of institutional framework, it is challenging to find an explanatory logic, whether geographical and/or political. Instead, we are struck by the diversity of the different groups: Nordic, southern, and eastern European countries, as well as more centralized or federalist countries, are found side by side. We can deduce from this that the presence in one or other of these categories of institutional frameworks is rather linked to the specific history of the "big surveys" and, consequently, of official statistics in the different countries.

Another important point is the method, which has a direct impact on the scope and representativeness of the results, but also on the costs of the enterprise; lastly, it indicates the value (or, at least, the degree of institutionalization) attached to the survey. All these studies are quantitative, and our interest is in these three elements of the method: The size of the sample, the frequency of the survey, and the methods of administering the questionnaire.

In terms of sample size, that is, the number of people (aged 15 or 16 and over, depending on the country, sometimes with an upper age limit) who responded, a wide range is observed, from 1,035 respondents in Romania or 1,125 in Malta to more than 33,500 in the UK and even

[10] In 2024, the Maltese Statistical Office published a study limited to amateur practices and people's self-perception as artists. Given its limited scope, it is not considered here. NSO Malta, *Cultural and Creative Practice Survey*, 2024 (https://nso.gov.mt/wp-content/uploads/Cultural-Creative-Practice-Survey-2024.pdf, last accessed May 31, 2025).

50,000 in Italy (Table 2).[11]

These surveys face a dilemma well-known to statisticians. The larger the sample, the greater the precision of the results, which by definition are estimates, with a margin of inaccuracy. At the same time, the larger the sample, the more expensive the survey. Finally, the ideal or sufficient sample size also depends on the size of the overall population. The differences in sample size observed can be partly explained by the size of the country's population. It is easy to understand why Malta, with a population of 450,000 at the time of the survey,[22] can be satisfied with a smaller sample than Spain (45 million population), the UK (around 67 million population), or Italy (59 million population). At the same time, the modest sample of Romania, with its 19 million population, or Austria with 9 million population, as well as the relatively large samples—around 10,000–13,000—of Sweden (10 million population) or Switzerland (9 million population), suggest that other factors, such as the means of the country and/or the degree of institutionalization of its survey on cultural participation, play a role. In this respect, it is undoubtedly no coincidence that all the large samples of around 5,000 individuals or more come from surveys housed within state structures, whether in official statistics or in the Ministry of Culture (Table 2).[12]

Another central element is the periodicity of a survey, as its aim—here as in other fields—is less to provide a single snapshot from a given year than to produce a film of cultural practices and their evolution (or lack thereof) through repetition and comparison. From quarterly (Denmark) to every 10 years (French-speaking Belgium), the spectrum is once again very broad (Table 3).

It should be noted that it is not necessarily the most frequent intervals that make the most sense; with a few exceptions (the COVID-19 pandemic being one), a frequent interval is less likely to reveal changes, even if it does allow closer and continuous monitoring of the situation. This is the approach taken by Denmark, the country with the longest-running survey of our population (1964), which has conducted its cultural habits survey of nearly 5,000 people quarterly. At the other end of the scale, both France (8–10 years, last survey in 2018) and French-speaking Belgium (10 years, last survey in 2017) have opted for a wide frequency, which also allows the effects of any cultural policy measures (prices, opening times, etc.) to unfold over time. Interestingly, even the COVID-19

Table 2. Sample size for "big surveys" on cultural participation in Europe

Survey (year)	*n* (participants)
Romania (2022)	1,035
Malta (2016)	1,125
Austria (2023)	2,000
Belgium-FR (2017)	3,000
Lithuania (2020)	3,200
Denmark (2024)[a]	4,800
Poland (2020)[a]	6,300
Norway (2023)[a]	9,000
France (2018)[b]	9,200
Estonia (2023)[a]	10,000
Switzerland (2024)[a]	10,000
Sweden (2023)[b]	13,000
Spain (2022)[b]	16,500
United Kingdom (2023)[b]	33,500
Italy (2022)[a]	50,000

Notes: [a]Surveys incorporated into official statistics;[b]Surveys at the Ministry of Culture.

Table 3. Frequency of "big surveys" on cultural participation in Europe

Survey (year)	Frequency
Denmark (2024)[a]	Quarterly
Italy (2022)[a]	Yearly
United Kingdom (2023)[b]	Yearly
Sweden (2023)[b]	Yearly
Spain (2022)[b]	2 years
Estonia (2023)[a]	2–3 years
Norway (2023)[a]	2–5 years
Lithuania (2020)	3 years
Romania (2022)	3 years
Poland (2020)[a]	5 years
Switzerland (2024)[a]	5 years
France (2018)[b]	8–10 years
Belgium-FR (2017)	10 years
Malta (2016)	Sporadic
Austria (2023)	Single

Notes: [a]Surveys incorporated into official statistics;[b]Surveys at the Ministry of Culture.

[11] Some of the sources indicate the initial sample; the figures given here refer to the net sample, i.e. the number of actual respondents, sometimes deducted with the response rate indicated (rounded figures). In Sweden, for example, the SOM survey was sent to 26,250 people; with a response rate of 48%, the sample of respondents was around 13,000 individuals.

[12] Sweden, which has a mixed institutional framework but where the Agency for Cultural Policy Analyses is part of Statistics Sweden, has also been included.

pandemic did not affect this rhythm, which is rigid when the survey is institutionalized, with state players resorting to additional, and therefore different, one-off surveys as necessary to monitor developments during these years.[13] Here again, we note that the short intervals are all the result of "big surveys" that are directly or indirectly integrated into their country's official statistics, even though not all of them follow this rule. In Malta, the survey has so far been carried out 3 times at irregular intervals (2000, 2011, 2016), and in the case of Austria, the listed survey appears to have been a one-off.

A final aspect of the method that interests us is how the questionnaire is administered (Table 4). Here again, the interviewers are faced with a dilemma, which is multiplied tenfold: The response behavior is notoriously better in the case of a survey conducted by telephone (CATI) or even directly face-to-face, often using a programmed paper questionnaire rather than by paper (PAPI) or online (CAWI) questionnaire, these last two methods meaning that the respondent is alone with the questionnaire (Table 4). At the same time, sociologists have been able to demonstrate phenomena of over- and under-reporting, particularly in surveys on socially valued themes, such as culture, in situations of face-to-face interviewing.[14] Furthermore, surveys conducted with an interviewer, which are potentially more reliable (but also more influenced), are considerably more expensive (around 5–10 times) than self-administered surveys through a paper questionnaire (where the data must, however, be entered at the end, either by hand or by a scanning system) and, above all, than online surveys to be completed alone, which, however, can lead to respondents adopting strategies to reduce response time. Table 4 shows the various methods used for administering the questionnaire in all these quantitative surveys.

Table 4. Questionnaire administration methods for "big surveys" on cultural participation in Europe

Survey (year)	Questionnaire administration method
Spain (2022)[b]	FTFI
France (2018)[b]	FTFI
Malta (2016)	FTFI
Belgium-FR (2017)	FTFI (CAPI) 2/3, CATI 1/3
Italy (2022)[a]	FTFI (CAPI) + CAWI/PAPI
Lithuania (2020)	FTFI 2,000+online 1,200
Estonia (2023)[a]	CAWI/CATI, FTFI
Poland (2020)[a]	CATI
Romania (2022)	CATI
Austria (2023)	CAWI/CATI
Norway (2023)[a]	CAWI/CATI
Denmark (2024)[a]	CAWI/CATI
Switzerland (2024)[a]	CAWI/CATI
United Kingdom (2023)[b]	CAWI/PAPI
Sweden (2023)[b]	PAPI

Notes: [a]Surveys incorporated into official statistics; [b]Surveys at the Ministry of Culture.
Abbreviations: CAPI: Computer–assisted personal interview (computer interview, usually face-to-face with an interviewer); CATI: Computer-assisted telephone interview (with an interviewer); CAWI: Computer-assisted web interview (online questionnaire to fill in); FTFI: Face-to-face interview (with an interviewer); PAPI: Paper-assisted personal interview (paper questionnaire to fill in).

Some countries, including Spain with 16,500 respondents and France with 9,200, use face-to-face interviews. This is also the case in the smaller Maltese survey in 2016. In French-speaking Belgium, 2/3 of the 3,000 respondents completed the survey face-to-face with an interviewer at home around a programmed questionnaire, and 1/3 by telephone, but it is specified that contact was always made at people's homes before any telephone calls were made.[23] In Italy, where the

[13] In France, the Ministry has filled this gap with one-off mandates, without altering the usual rhythm of its regular "big survey," with a smaller survey (n = 3,025) on "The cultural practices of the French after the health crisis" in 2021 commissioned from Harris Interactive, a polling and marketing research institute (https://www.culture.gouv.fr/espace-documentation/rapports/Les-pratiques-culturelles-des-Francais-apres-la-crise-sanitaire-Bilan-a-la-fin-de-l-ete-2021) and two others on "Cultural outings of the French after two years of COVID-19" in 2022 (https://www.culture.gouv.fr/espace-documentation/statistiques-ministerielles-de-la-culture2/publications/collections-de-synthese/culture-etudes-2007-2025/Les-sorties-culturelles-des-Francais-apres-deux-annees-de-Covid-19-CE-2022-6) and "Cultural outings and online activities of the French in 2023" (https://www.culture.gouv.fr/espace-documentation/statistiques-ministerielles-de-la-culture2/publications/collections-de-synthese/culture-etudes-2007-2025/les-sorties-culturelles-des-francais-et-leurs-pratiques-en-ligne-en-2023-cinema-concert-et-theatre-ce-2024-2) commissioned from the research institute Crédoc, *Centre de recherche pour l'étude et l'observation des conditions de vie*, incorporated into its own "big survey" on the "Living conditions and aspirations of the French" conducted in three annual waves among 3,000 people. In Switzerland, the Federal Office of Culture has commissioned *L'Œil du Public*, a marketing research institute, to conduct a total of four surveys in 2020–2022 on "Cultural outings in COVID-19", involving small samples (n = 900–1,200) (https://loeildupublic.com/etude-culture-covid/, all last accessed May 31, 2025).

[14] This is the investigator effect noted by Pierre Bourdieu in a text on "*the research situation and its effects*" in: Bourdieu, P (ed.). *La Misère du monde*. Paris: Seuil; 1993.

survey "*Aspetti della vita quotidiana*" (Aspects of daily life) used for cultural participation has the largest sample size studied (n = 50,000), an initial questionnaire is also completed face-to-face (with the interviewer using a computer) to correctly capture the socio-demographic and economic data of the household members; followed by a self-administered questionnaire on the aspects themselves, either using CAWI or PAPI. In Lithuania, 2,000 questionnaires are completed face-to-face, and 1,200 online by respondents alone, without specifying the exact method. In Estonia, too, some of the 10,000 questionnaires are collected face-to-face. Some countries rely on telephone surveys (Poland, Romania). The countries with CAWI/CATI apply the new technique—all these surveys are recent, dating from 2023 or 2024—known as mixed-mode: This consists of first offering the less expensive CAWI, and then, for a minority of the sample who did not respond readily (around 10–20%), supplementing it with CATI (telephone), notably for groups with difficulty in internet access (particularly the elderly). Sweden is the exception that proves the rule, being the only country to use a paper questionnaire, despite its large sample size (n = 13,000).

The random distribution in the table of the "big surveys" carried out by official statistics or the Ministry of Culture indicates that this variable is irrelevant here, as seen in the sample size as well. Indeed, it is striking to note that the CAWI/CATI group is made up almost exclusively of Central and Northern European countries (except Sweden). Whereas, the face-to-face mode (or exclusively CATI, which is a transposition to the telephone) is mainly used in surveys from Latin and Eastern European countries. It is worth noting, however, that a number of these took place before 2020. Beyond the benefits and drawbacks of each survey method, it is important for a repeated survey to maintain the same protocols to guarantee comparability. In this respect, the organizations in charge of these "big surveys" are faced with a Cornelian dilemma, given the stagnating or even diminishing resources of the public authorities, being pushed to switch to the mixed-mode: A survey mainly completed online, which is by far the least expensive, but also the least controllable.

5. The territories of cultural participation in terms of names and definitions

After the institutional frameworks for measurement and their methods, we now turn our attention to what is being measured. All the surveys studied relate to the cultural activities of the population, which have been referred to as cultural participation by a generalization of convenience, using a term that has become established at the international level, but which is questionable. However, it is uncertain that the conception of these activities, and therefore their denomination and definition, is the same in every country. For if the measurement of cultural activities refers to a methodological process of recording and institutional registration of this process, it also implies that we grasp these activities intellectually, through a conceptual understanding, for which the title of the survey is the gateway.

The first interesting aspect to analyze is the name given to these "big surveys." While they all deal in one way or another with the cultural activities of the population, the titles vary considerably, and their connotations indicate the differences that, beyond the shared aim of measuring cultural participation, structure these surveys. Therefore, the final Eurostat report of 2012 noted the lexicological diversity, describing the expressions "cultural practices," "cultural participation," and "participation in cultural activities", a little quick as synonyms.[24] The different names of the 15 "big surveys" studied can be aggregated according to their keywords (Table 5).

The titles of the first group of countries are based on the terminology of "cultural participation" or "participation in culture," titles which focus on the idea of culture and cultural activities as a factor of social integration. Nothing seems to distinguish the countries that make up these first two groups—not even the fact that the survey is part of either official statistics or the Ministry of Culture, which concerns half of these countries. The UK calls it "Participation Survey," and the absence of the word "culture" reinforces the sense of participation mentioned: What is measured here is less access to cultural content than participation in society and, ultimately, the economy. It is almost the opposite for Norway, which has chosen to use only the word "culture" in the name of its barometer. The approach is rather focused on culture—the Statistics Norway website refers to the population's use of various cultural activities measured by the survey, in a rather neutral, even utilitarian way.

The Romanian cultural barometer applies the notion of consumption. It is the only one to do this so openly (with Spain linking it to another term), while pointing out the keyword of the next group, practices, is not removed from a utilitarian conception of cultural activity. The Romanian case enables us to transition to the group of four countries, which place their survey in the vein of cultural practices. This is unsurprisingly the case in France, which seems to be at the origin of the term and has used it since its first survey in 1973. Far from being neutral, the notion of cultural practices is inextricably linked to the eponymous survey in the French-speaking world, and therefore to the paradigm of cultural democratization. Logically, the concept is also

Table 5. Titles of "big surveys" on cultural participation in Europe

Survey (year)	Denomination
Group 1	
Austria (2023)	"Cultural Participation in Austria"
Malta (2016)	"Cultural Participation"
Italy (2022)	*"Tempo libero e partecipazione culturale"* (Leisure Time and Cultural Participation)
Group 2	
Estonia (2023)	"Participation in Culture"
Poland (2020)	"Participation in Culture in Poland"
Lithuania (2020)	"Participation in Culture and Satisfaction with Cultural Services in Lithuania"
Group 3	
United Kingdom (2023)	"Participation Survey"
Norway (2023)	"Norwegian Cultural Barometer"
Group 4	
Romania (2022)	"Cultural Consumption Barometer"
Group 5	
Belgium-French (2017)	"*Pratiques et consommations culturelles de la population en Fédération Wallonie-Bruxelles*" (Cultural Practices and Consumption of the Population in the Wallonia-Brussels Federation)
France (2018)	"*Pratiques culturelles des Français*" (Cultural Practices of the French)
Switzerland-French (2024)	"*Pratiques culturelles en Suisse*" (Cultural Practices in Switzerland)
Group 6	
Spain (2022)	"Survey of Cultural Habits and Practices in Spain"
Denmark (2024)	"Cultural Habits Survey"
Sweden (2023)	"Cultural Habits"
Switzerland-German (2024)	"*Kulturverhalten in der Schweiz*" (Cultural Behavior in Switzerland)
Switzerland-Italian (2024)	"*Attività culturali in Svizzera*" (Cultural Activities in Switzerland)

Note: The names of the surveys are in the original language or, if available, in English (Sweden: online translation from Swedish). This is the name of the survey or the resulting publication. In the case of Switzerland, a distinction is made between the name of the survey in the three main national languages.

used in French-speaking Belgium, accompanied here by the idea of consumption, which is rare in this study (two countries), and also in Switzerland, where the French title of the survey is also part of this Francophone tradition.

One group of countries is focusing more on the idea of cultural habits or behavior in the Swiss German title. Both terms point in the same direction of a routine, almost unconscious activity. This would be in line with a narrow definition of culture or cultural offerings and their use, rather than with its broad or anthropological meaning: The performance of different activities within a society would be a matter of habit, of things that are performed repeatedly without questioning. Alongside German-speaking Switzerland, we find two northern countries—Denmark and Sweden—as well as Spain, whose title is one of the only ones (along with that of Belgium) to combine the two concepts, with practices also pointing in some way to the French neighbor. Finally, the Italian title of the Swiss survey is perhaps the least connotative, referring simply to cultural activities.

Beyond the titles, the type and scope of activities covered by the "big surveys" are our study interest. Across them, implicit definitions of culture take shape. They are pluralistic. The relationship between what is considered culture and what is relegated to leisure differs from country to country: For example, sporting events, which are often covered, are part of cultural activities in some countries (as in Denmark), while in others, they are considered leisure (as in Switzerland). Moreover, culture in these surveys can be old and new, particularly for indoor (or private) activities, depending on the activities and media covered. Above all, it can be restricted or broad, in terms of external activities, also following the polysemy or rather the elasticity of a concept which, for ethnologists and anthropologists, goes so far as to encompass the whole of society. Table 6 summarizes the different areas covered by the questionnaires from the 15 countries under study along these two axes, indicating whether a limited, medium, or large number of questions covered the areas.

A first series of activities is covered by all the national surveys: Attendance at cultural institutions, such as theatres, museums, concerts of all kinds (generally including festivals), and cinemas. Libraries and amateur activities are included in almost all the questionnaires. As already noted in the first inventory of national surveys on the subject in 2012, commissioned by a Eurostat working group, "there is some consensus on the core topics that should be covered, dealing with cultural participation."[24(p251)] For the rest, however, it is the differences in coverage and intensity that are striking. Regarding the range of areas covered, three main categories of survey emerge, each representing a specific mapping of cultural territories.

The first group comprises four countries, characterized by questionnaires that are both fairly succinct and limited to a rather classic or traditional definition of culture. This applies to questions about outdoor activities, which focus on the institutional offer, sometimes supplemented by sporting events or gatherings, assemblies, or training

Table 6. Areas covered by the "big surveys" on cultural participation in Europe

Activities	Outdoor activities							
Survey (Year)	Cultural institutions	Amateur practices	Cinema	Libraries	Archives (separate)	Cabaret, circus, etc.	Zoo, park, etc.	Science or theme parks
Culture definition	Narrow–Large							
Austria (2023)	1		1			1		
Estonia (2023)	2	2	2	2				
Sweden (2023)	1	1	1	1				
Norway (2023)	1	1	1	1				
Italy (2022)	3		1	3		1		
Belgium-FR (2017)	3	3	2	3		3	1	3
Switzerland (2024)	3	2	1	3		1	1	
Spain (2022)	3	3	3	2	1	1	1	1
France (2018)	3	3	3	2	1	2	1	2
UK (2023)	3	2	1	3	1	1		
Denmark (2024)	3	2	2	3		2		
Malta (2016)	3	3	1	1				
Lithuania (2020)	2	3	1	1	1			
Poland (2020)	3	2	1	1		1	1	1
Romania (2022)	1	1	1	1		1		
Number of surveys	15	13	15	14	4	10	5	4

Activities	Outdoor activities							
Survey (Year)	Sports events and matches	Restaurant, friends, disco, etc.	Sport, fitness	Gatherings, associations, training, volunteering	Shopping, fairs	Fashion, fashion shows	Free time, including satisfaction	Holidays, travels
Culture definition	Narrow–Large							
Austria (2023)								
Estonia (2023)	1		1					
Sweden (2023)				1				
Norway (2023)	1			1				
Italy (2022)	1	2	3	3			2	
Belgium-FR (2017)	3	3	3	2	3			
Switzerland (2024)	1	1	1	1				
Spain (2022)	1			1	1			
France (2018)	1	1	1				1	1
UK (2023)			2			1		1
Denmark (2024)	1		3	3				
Malta (2016)		1	1	1				
Lithuania (2020)				2				
Poland (2020)	1	1		1			1	
Romania (2022)	1	1	1	1	1			1
Number of surveys	10	7	9	11	3	1	2	3

(Cont'd...)

Table 6. ***(Continued)***

Activities	Outdoor activities					Indoor/private activities			
Survey (Year)	**Satisfaction with life**	**National events or works**	**Church, religious service**	**Languages**	**National identity, citizenship**	**Reading books**	**Listening to music**	**Media practices (Television, films)**	
Culture definition		**Narrow–Large**				**Old–New**			
Austria (2023)						1	1	1	
Estonia (2023)						2			
Sweden (2023)						1		1	
Norway (2023)						1			
Italy (2022)						2	1	2	
Belgium-FR (2017)						3	2	3	
Switzerland (2024)		1				3	2	2	
Spain (2022)		1				3	3	3	
France (2018)		1				3	3	3	
UK (2023)		3				1	1	1	
Denmark (2024)		1	1			3	3	3	
Malta (2016)	1	3	1	2		2	3	2	
Lithuania (2020)		3			3	1		2	
Poland (2020)		3			3	3		1	
Romania (2022)			1		3	1	1	1	
Number of surveys	1	8	3	1	3	15	10	13	

Activities									
Survey (Year)	**Press, magazines**	**Series (separate)**	**Activities at home, games**	**Access to news, information**	**Walks, nature**	**Video games**	**ICT, digital use**	**Date use, identification, security**	**AI**
Culture definition					**Old–New**				
Austria (2023)									
Estonia (2023)									
Sweden (2023)		1	1			1			
Norway (2023)							1		
Italy (2022)	1	1		3		1	3		
Belgium-FR (2017)	3		3		1		3		
Switzerland (2024)	1	2	1		1	1			
Spain (2022)	3					1	1		
France (2018)	1	3	3	3		3	2		
UK (2023)						1	3	3	
Denmark (2024)	3	3	3	3	2	3	3		2
Malta (2016)	2			1			3		
Lithuania (2020)	1						1		
Poland (2020)	2					1	2		
Romania (2022)	1				1		2		
Number of surveys	10	5	5	4	4	8	11	1	1

Note: Number of questions in the area listed in the column: 1=Low, 2=Medium, 3=High.
Abbreviations: AI: Artificial intelligence; ICT: Information and communication technologies.

courses. This restrictive scope can also be observed for indoor (or private) activities, which are limited and only exceptionally include video games or digital uses, in Sweden and Norway. In addition to these two Scandinavian countries, there are one Central European and one Eastern European country: Austria and Estonia. In terms of survey titles (Table 5), there is little in common, with two countries referring to cultural participation (Austria, Estonia), one to culture as such (Norway), and one to cultural habits (Sweden).

The second group is the most numerous: It includes seven countries whose questionnaires are characterized by a treatment of outdoor activities that is both much more in-depth and much broader. These include outings, such as cabaret/circus, zoos, and theme parks, as well as restaurants and outings with friends, and sports/fitness. In some cases, shopping and fairs are even included (particularly in Belgium, where the focus is on strolling and window-shopping, going to flea markets and *brocantes*, trade fairs, and even supermarket shopping[23]), fashion and fashion shows (in the UK), people's cultural and landscape tourism (in Italy), as well as holidays and travel (in France). A fair number of the surveys in this group include aspects, such as the attendance of specifically national works or events (flamenco or bullfighting, Danish series or films, French variety shows, major cultural, sporting or royal events in the UK), and even religious services (Denmark), which are very rare in these surveys, as if culture could not bear to include religious themes. However, the idea of going out (including church) remains a classic one, without expanding to a broader, social definition of culture.[15] Indoor activities are also dealt with a way that is both detailed and all-encompassing, incorporating new areas, such as series (in specific questions), video games, and ICT/digital use, as well as one case that details questions on the use of data (in the UK, where the questionnaire puts physical and digital engagement on an equal footing, including for the attendance at traditional institutions) and in another case the question of artificial intelligence (Denmark). The composition of this group is striking in its great diversity: The countries represented come from almost all over Europe, with the notable exception of Eastern Europe. In terms of survey headings, this group is equally eclectic. It is nevertheless noteworthy that all three countries subscribing to the idea of cultural practices are represented here: Belgium, France, and Switzerland (French-speaking and Italian-speaking headings).

The last group is again smaller, with four countries whose questionnaires are less detailed (in terms of both outdoor and indoor activities), but more comprehensive in terms of areas than the first group. It is characterized by a broad definition of culture, with not only religious outings as a theme in two countries, but also the question of language in one and a strong emphasis on national identity and civic mindedness in the other three. In Poland, for example, folklore events/picnics, themed group/club activities, and tourist tours and rallies form part of what is measured. In Malta in 2017, according to the questionnaire and its publication, the language preferences (between Maltese, English, and Italian) of the population of this island in the heart of the Mediterranean with varied historical influences form part of the cultural participation scope as one of the chapters in the publication. However, even within culture itself, attendance at cultural institutions or events encompasses religious practices and official events. In Poland, participation in culture includes aspects, such as "knowledge of a person's family history" and "ways to celebrate Independence Day on November 11." In Lithuania, the focus is on the links between national culture and personal identity, and also on the links between involvement in culture and civic, social, and emotional attitudes, such as "being very proud to be Lithuanian citizens."[25] The latter group is made up exclusively of Eastern European countries. The case of Romania is unique in that it is not the questionnaire itself, but its contextualization in the publication on "The 2022 Cultural Consumption Barometer," which is broad: Its title is misleading since, far from consumption, it is a detailed publication about "Cultural Participation and Democratic Perspectives," according to its subtitle. It is therefore the political project behind, or rather around, the measurement of cultural participation that shall now interest us, to better understand the different ways in which countries measure cultural participation.

6. The symbolic territory of "big surveys" grappling with cultural policy paradigms

Beyond the institutional frameworks, the survey methods and procedures, and the titles and activities covered

[15] The Swiss survey is interesting in this respect. In this country, the survey on cultural participation is integrated into the *Language, Religion, Culture Survey* (ELRC), thus including linguistic and religious practices. The original idea was to look at everything that connects people. At the same time, the three themes are analyzed separately, with linguistic and religious practices being dealt with under demography (https://www.bfs.admin.ch/bfs/fr/home/statistiques/population/langues-religions.html), while cultural practices form part of the Office's cultural statistics (https://www.bfs.admin.ch/bfs/fr/home/statistiques/culture-medias-societe-information-sport/culture.html) (both last accessed May 31, 2025).

by the "big surveys" on cultural participation, it is the reference frameworks, or paradigms,[26] that govern the statistical measurement of this subject that are decisive. It appears that these paradigms are manifold. In a way, this plurality is already contained in the word "culture," which is itself flexible. The cultural participation to be measured is linked to the implemented definition of culture, a multifaceted concept not limited to the narrow meaning generally given by common sense, but which extends to the broader sense held by anthropologists. In their view, culture can be conflated with the notion of civilization, and therefore with the idea of the political, social, economic, and technical development of a society. According to a now canonical definition by the British anthropologist, Edward Tylor, at the beginning of the first chapter of his book "*Primitive Culture*," "Culture or Civilization, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society."[27(p1)]

For more than half a century, various cultural policy paradigms have emerged, which may also target the cultural activities of the population. The quest for audience that public authorities have embarked upon since the 1960s has been driven by different rationales that sometimes seem to clash somewhat. The different continents of this polyphonic symbolic territory orchestrate or set to music the state measure of cultural participation (Figure 1). They form a historically constituted and shared score, international even if expressed in national variations.[16]

To the original paradigm of cultural democratization described earlier, which emerged in the 1960s and focused on extending access to institutional and professional cultural offerings deemed valuable to as many people as possible, a second paradigm, that of cultural democracy, arose in the 1970s. It offers both a counterpoint and an extension. Faced with the challenge of expanding audiences sociologically and with Western societies advocating pluralism, this paradigm implied recognizing and respecting the cultural diversity intrinsic to countries and the possibility for different groups in society to express their own culture, including at an amateur level. Decentralization and bringing cultural policy decisions and actions closer to the people were the key words here.

With the end of the post-war era, the emergence of neo-liberalism and New Public Management, and the growing need to legitimize public spending on culture,[28] a certain instrumentalization of culture began. From the 1980s onward, culture has been tasked with providing a social cement for increasingly divided societies. This is the third paradigm of cultural policies, that of social integration through culture. In international surveys, this shift from access to culture to access to social cohesion has been observed over time. It is the slow shift from "cultural activities," a relatively neutral concept, to "participation in cultural activities" in the early 2000s, finally to "cultural participation" altogether around 2010.[17] This social and somewhat lenient approach is finally stabilized at international level in the United Nations Educational, Scientific and Cultural Organization (UNESCO) statistical conceptual framework published in 2012: Under the title "*Measuring Cultural Participation*," it defends this participative notion of culture that goes beyond the arts to include informal or traditional activities; a notion of cultural participation, including so-called and diffuse ambient arts participation; and culture as social cohesion, linked to aspects of well-being and citizenship. Not having access to culture means being excluded not from works of value, but from society: "without the right to participate in cultural life, individuals fail to develop the social and cultural connections that are important to maintaining satisfactory conditions of equality."[29(pp20,32)] This paradigm also embraces the desire for integration, or even appeasement, in Western societies that are not only

[16] For a summary that provided us with important elements for the following paragraphs, cf. Duelund, P, Baltysson B and Bohlbro L. "Country Profile – Denmark". *Compendium of Cultural Policies and Trends in Europe*, 2012, chapter 1 "Historical perspective: cultural policies and instruments", p. 2-5 (https://www.culturalpolicies.net/wp-content/uploads/pdf_full/denmark/denmark_032012.pdf, last accessed May 31, 2025).

[17] This transition can be seen in the titles of the Culture Eurobarometers. In 2002, in the title of the first of them, "European's participation in cultural activities," the idea was introduced: Somewhat abstract but symptomatic of this transition from culture to society, to cultural activities that one no longer does for their own sake as in cultural practices but in which one participates, together with other people (https://ec.europa.eu/eurostat/web/products-eurostat-news/-/culture). In 2013, the wording "Cultural access and participation" was used, implying that the former serves the latter (https://europa.eu/eurobarometer/surveys/detail/213). The current Eurostat page is entitled "Culture statistics – cultural participation" (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Culture_statistics_-_cultural_participation) (all last accessed May 31, 2025).

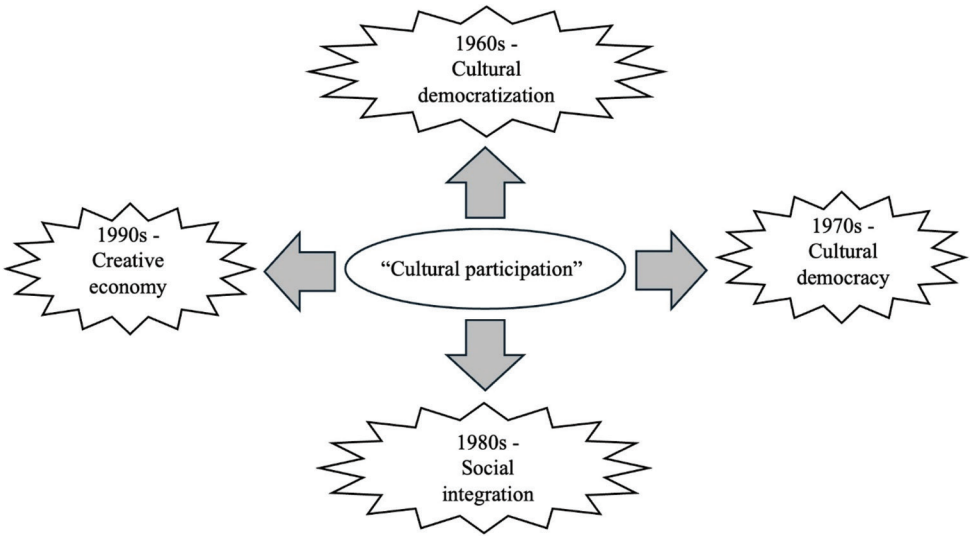


Figure 1. Cultural policy paradigms around the measurement of cultural participation

increasingly unequal, but are also faced with migration and the cultural diversification of their populations.

In the 1990s, the idea of the economic utility of culture emerged in parallel. The paradigm of the creative economy, with its host of variants—the cultural industries, creative industries, and other cultural and creative economies—becomes a structuring perspective, sometimes even in the measurement of cultural participation. Here, too, there is a shift: From an initial focus on the contribution of culture to the economy, in terms of direct or indirect impact, to culture itself as a dynamic and innovative economic sector. However, this shift in focus comes at the cost of including sectors that are promising but sometimes far removed from the traditional definition of culture, such as architecture, advertising, video games, and even, in the broadest definition of the creative economy, the entire software industry. This paradigm focuses more on the supply and production side, including the idea of encouraging the development or establishment of creative classes.[30] However, it also depends on demand, and therefore on the population's cultural activities, particularly the indoors (before the nomadization of devices and the spread of the internet) or private activities, by examining the consumption practices and media, and, increasingly, digital uses. Starting in the UK, with the first documentation on the "Creative Industries" published in 1998 by the British Department of Culture, Media and Sport, this approach gradually gained ground at the global level. Published in 2013, UNESCO's "Creative Economy Report" enshrines this economic, even economistic, vision of culture, in conjunction with local social, political, and territorial development objectives.[18]

The rise of these paradigms is less sequential than cumulative: Today, these different cultural policy models coexist and can be mobilized individually or, sometimes, in combination to give meaning to the measurement of the population's cultural activities, depending on the political agendas of the countries. The 15 "big surveys" examined more closely in this article, which are themselves the fruit of a history that is both cumulative (enlarging or adding aspects) and diminutive (reducing or eliminating), illustrate these paradigms, while also materializing combinations or interesting gaps and adjustments. To show how the "big surveys" fit into this symbolic territory of paradigms, it is necessary to go beyond a purely internal analysis of the surveys and their questionnaires, which enjoy at least relative scientific and statistical autonomy, and relate them, through an external analysis, to contextual elements mobilized at the time of publication of the results

[18] See in particular: Department of Culture, Media and Sport (ed.). *Creative Industries Mapping Document*. London: DCMS; 1998 (https://www.gov.uk/government/publications/creative-industries-mapping-documents-1998), Bakhshi, H., Hargreaves, I. and Mateos-Garcia, J. *A Manifesto for the Creative Economy*. London: NESTA; 2013 (https://www.nesta.org.uk/report/a-manifesto-for-the-creative-economy/), European Parliament. *Report on Cultural Industries* (2007/2153(INI)); 2008 (https://cultureactioneurope.org/wp-content/uploads/2015/02/3.-European-Parliament---s-report-the-Cultural-Industries-in-Europe.pdf) and UNESCO. *Creative Economy Report. Widening Local Development Pathways*. Paris: UNESCO; 2013 (https://unesdoc.unesco.org/ark:/48223/pf0000224698) (all last accessed May 31, 2025).

and their inclusion in the cultural policy of the countries concerned.[19]

6.1. Cultural democratization as a persistent canon

A large number of the 15 "big surveys" studied—six in all—fall within the classic paradigm of cultural democratization. The corollary of this is a definition of culture that tends to focus on the institutional offer, the privileged place for disseminating capital works of humanity, the purpose of which is to confirm whether as many people as possible make use of it. This is the case, almost purely, in Austria. Its survey, the shortest in our sample (Table 6), is strongly focused on attendance at institutional cultural events; the subtitle of the publication is "Visit to cultural events and venues." It is also one of the very few surveys that does not cover amateur practices, in this sense, excluding any extension toward cultural democracy. With a strong policy of offering quality, visibility, and prestige, the aim in Austria, according to a recent country profile describing its cultural policies, is the involvement and participation of as many citizens as possible in art and culture, particularly to reach more and broader strata of the population. The institute in charge of the survey detailed in its 2023 summary, under the chapter entitled "Cultural participation as an indicator of class society," the persistence of the effect of cultural capital on attendance at institutional cultural events, in the purest Bourdieusian tradition, noting at most a Petersonian extension in terms of an omnivorism limited to the elites.[20] This is the perspective known in the French-speaking world as that of cultural practices: The point of view conveyed is that there is a pre-existing supply of cultural facilities, which is a question of practicing or, according to the terminology of certain countries, using, revealing a utilitarian aspect. In Denmark, for example, the use of cultural activities is measured in a circular formula already mentioned, and in Norway, the cultural use by people is measured.[21]

A similar situation can be observed in Sweden, where the "big survey" dates back to the 1980s. Here, increasing cultural participation has been a central aim for Swedish cultural policy since the 1960s, the ideal being, echoing the Malrauxian quote, "that quality art can be accessible to all," in particular, by widening audiences in terms of class and education background, with in recent years an increased emphasis on gender, disability, sexual orientation, or migratory background. The focus of Swedish cultural policy is on access to the artistic part of culture: The aim is to make arts and culture activities available throughout the country, which means policies intended to enhance the participation of citizens in cultural life and, particularly, in artistic activities; hence, including amateur activities, which are highly valued. This opens the door to cultural democracy. The form of the Swedish questionnaire, very compact as we saw, must therefore be understood in this highly targeted, almost utilitarian context: Studies of cultural habits are an important support for cultural policies at different levels. The Government of Sweden assigned the agency in charge of the survey to evaluate, analyze, and present the effects of proposals and measures taken in the cultural field to shed light on the situation regarding the national cultural policy objective that everyone should have the opportunity to participate in cultural life. It should be noted that the country's cultural and migratory diversification could eventually pose challenges for this major survey: While, according to the country description already cited, "so far, cultural policy remains relatively stable," some observers see in 2025 an erosion of consensus and increased polarization and politicization around these issues. As a result of the right-wing shift in the country's political landscape, there has recently been a call for the establishment of a Swedish cultural canon in 2023, a refocusing on national culture that, however, has remained invisible in the country's questionnaire from the same year.[22]

[19] In addition to the official statistics or agency sites and online documents already mentioned (see Appendix), the sources here (indicated subsequently in footnotes) consist of the various national reports available on the European "Compendium Cultural Policies and Trends" site (https://www.culturalpolicies.net/) which, managed by the Boekman Foundation until 2020 and by the Kulturpolitische Gesellschaft E. V. (Bonn, Germany) from 2021, is a reference on the subject, whether we search by country (https://www.culturalpolicies.net/database/search-by-country/) or among the "short profiles" (https://www.culturalpolicies.net/database/short-profiles/) (all last accessed May 10, 2025), mainly the chapters on "policies and programmes" concerning "cultural participation."

[20] Compendium, "Country Profile – Austria", chap. 6 "Cultural participation and consumption"; 2020, section 6.1 (https://www.culturalpolicies.net/database/search-by-country/country-profile/category/?id=3&g1=6) and "Short profile" of Austria, 2023, 2 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/austria/Austria_short_01_2023.pdf) and Sora, *Cultural Participation in Austria 2022*; 2023 (https://www.bmkoes.gv.at/dam/jcr:8fb046c7-edb8-4a21-ae94-e536ccec3dc0/Kulturelle Beteiligung in Österreich_Executive Summary EN.pdf) (both last accessed May 10, 2025).

[21] Statistics Denmark (https://www.dst.dk/en/Statistik/emner/kultur-og-fritid/digital-adfaerd-og-kulturvaner/kultur-og-fritidsvaner) and Statistics Norway (https://www.ssb.no/en/kultur-og-fritid/kultur) (both last accessed May 10, 2025), accentuated by author.

[22] Compendium, "Country Profile – Sweden" 2016, 40

Cultural democratization is also found in another Nordic country, Norway, where this type of practice has been measured for over 30 years: In the post-war period, a considerable emphasis was laid on the democratization of culture, as arts and culture were considered both an important measure for the welfare of the entire population and as a useful tool for public education. The aim of the survey, which is also very brief, is to gather information about and to present the population's access to and use of various cultural activities, with a very classic list that includes sports events and religious or ethical meetings as well. A move toward decentralization in the 1970s aimed to give more space to amateur culture, which is also present in the questionnaire. These cultural policy objectives have changed very little over the past 20 years, when a white paper in 2003 reaffirmed the importance of public access to high-quality culture. A recent addition is the importance of freedom of expression in culture, seen as a pre-requisite for an educated and enlightened public and as an investment in democracy, but which cannot be observed in the questionnaire itself and ultimately seems to follow the classic bourgeois conception of a mainly institutional cultural offering.[23]

In some countries, the paradigm of cultural democratization is sometimes questioned, without being abandoned. In Italy, as we saw, the "big survey" is included in a broader questionnaire on the population's habits, but solely focuses on traditional cultural participation. Against the backdrop of the COVID-19 pandemic, the 2022 publication examines the changes underway in cultural participation and a possible redefinition of what is referred to here as cultural participation and leisure activities. The question is whether the recreational consumption that is said to be the sole preserve of new generations of young people means that the latter are less culturally involved or whether, on the contrary, the paradigms and reference models for defining cultural participation have changed. Their recreational consumption, while certainly not comparable to traditional consumption, is perhaps not of lesser value?[24] This question, which the UK does not hesitate to answer in the affirmative, remains open here.

In another southern European country, Spain, the classic focus on cultural democratization is complemented by a marked interest in private consumption, which raises the issue of intellectual property—note that Spain is home to the EU Intellectual Property Office in Alicante. The objective of the survey, according to the publication resulting from it, is to evaluate the development of the main indicators for cultural habits and practices among the Spanish population. It is also a question of studying in depth the ways of obtaining specific cultural products subject to intellectual property rights, such as books, recorded music, video, and software. The section on indoor activities in the survey is one of the most developed in the population studied (Table 6). A 2024 document also states that access to culture and participation in cultural life remained among the prime objectives of recent Spanish cultural policy. However, things could change in Spain. It is also noted that generating demand outside the sphere of mass culture is a complex issue. By saying that the citizens' right to have their say about how the cultural life of their communities is defined gives considerable room for development, Spanish cultural policy seems to be opening a small door to cultural democracy, at least in the future.[25]

The "big survey" of the cultural practices of the French "*Pratiques culturelles des Français*" is both a partly fantasized point of origin and, even today, the emblematic incarnation of the cultural democratization paradigm. However, the questionnaire itself can be misleading: Very broad, it begins by focusing on leisure time, holidays, and travel; this is followed by a very detailed section on board games, with 10 different genres, then on video games (again with details of genres, who people played with), TV consumption of films and "series, serials" (with 16 genres of series and around 15 titles proposed). However, even as

(https://www.culturalpolicies.net/wp-content/uploads/pdf/sweden/sweden_112016.pdf) and 2023, 48 (https://www.culturalpolicies.net/wp-content/uploads/pdf_full/sweden/Full-Country-Profile_Sweden_Dec_2023.pdf) as well as "Short profile" of Sweden in 2025, 3 and 7 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/sweden/Sweden2025_finalshort.pdf), and Swedish Agency for Cultural Policy Analyses, *Cultural Habits 2023*; 2024, 5, foreword (https://kulturanalys.se/wp-content/uploads/2024/07/Kulturvanor-2023.pdf, online translation by author) and the agency's website (https://kulturanalys.se/en/frontpage/) (all last accessed May 10, 2025).

23 "Norwegian Cultural Barometer 2023" (https://www.ssb.no/en/kultur-og-fritid/kultur/statistikk/norsk-kulturbarometer) and Compendium, "Short profile" of Norway, 2022, 6–7 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/norway/Norway-short-122022.pdf) (both last accessed May 10, 2025).

24 Istituto Nazionale di Statistica (Istat), *Tempo libero e partecipazione culturale. Tra vecchie e nuove pratiche*; 2022, 9 (https://www.istat.it/it/files/2022/09/Tempo-libero-e-partecipazione-culturale_Ebook.pdf, last accessed May 10, 2025).

25 Division for Statistics and Studies, General Technical Secretariat, Ministry of Culture and Sport, *Survey of Cultural Habits and Practices in Spain 2021-2022*; 2022, 3; Compendium, "Short profile" of Spain, 2024, 3 (https://www.cultura.gob.es/dam/jcr:4ef6fd7b-554c-45b7-a39a-71d09fd44282/synthesis-of-results-2021-2022.pdf, last accessed May 10, 2025).

the concept of eclecticism appeared in France in the wake of its "big survey", seemingly replacing that of cultural exclusion,[13] the focus is still on institutional supply. It is indeed, following tried and tested terminology, the penetration rate of cultural facilities that is at the forefront, and the Ministry of Culture's publication, *Cinquante ans de pratiques culturelles* (50 years of cultural practice), looks at the ageing of the baby-boomer generation, which is singular in its attachment to these facilities, and asks the question of the renewal of audiences for some of these activities. According to a 2023 document, the cross-cutting objective of French cultural policy remains eminently Bourdieusian: To correct recognized inequalities in access to culture and cultural institutions due to geographical, economic, and social obstacles impeding cultural participation, while also drawing on the notion of cultural rights: Equal access to culture for citizens is constitutional. While France recognizes that culture is an integral part of overall development, including social and economic development, opening up to other paradigms that have emerged in the meantime, French cultural policies aim to extend and diversify audiences. There is also an effort to foster the development of a wide range of cultural and artistic activities across all cultural fields. However, it is important not to overlook the fundamentals and to maintain a balance between what has been conceptualized as cultural democratization on the one hand, and cultural democracy on the other hand.[26] Here too, a door is ajar toward cultural democracy.

6.2. Cultural democracy as a rare step

Of the "big surveys" studied, only two ventured frankly into the field of cultural democracy. In French-speaking Belgium, which subscribes to the terminology of "cultural practices," the survey, one of the two most comprehensive and in-depth (along with Denmark, Table 6), takes this step. The Danish survey is the only other one to do so. The Belgian 2017 survey, according to its publication in 2020, initially adopted the aims of the first survey of 2007 to identify the factors that lead people to participate in a cultural activity and to uncover the motivations, interests, and benefits derived from this participation, and to understand the influences and triggers that lead to cultural practice. However, the fairly broad range of the population that emerged from the first survey as having little or no cultural practice (or at most television viewing) led to a rethink of the questionnaire in this country. The aim was therefore to investigate practices of exchange and participation more closely in the population, which take place outside cultural institutions, such as time spent strolling, shopping, being with friends and neighbors, looking after children and grandchildren, cooking, and on personal development. In other words, beyond the question grid, it was the reading grid that had to be revised. No doubt in connection with the questions on this subject that had also emerged in the sociology of culture,[31] "new questions were therefore added to this reading grid that could be broadly described as 'legitimist' or normative," and it was necessary to "rethink our questionnaire, on the assumption that we were unable to pinpoint what constituted 'culture' for this category of the population."[23(p5,6)] As the last quotation shows, this paradigm of cultural democratization, combined with that of cultural democracy, is already touching on that of social integration.

Denmark, whose survey is the oldest of the 15 studied and whose questionnaire, along with that of French-speaking Belgium, is the most comprehensive, can also be linked to the paradigm of cultural democracy. In fact, under the heading of "cultural habits" and "free time,"[27] the survey also covers activities described as broader, such as leisure and indoor activities, which are developed to the greatest extent in this questionnaire (Table 6): According to Statistics Denmark, "the purpose of the Cultural Habits Survey is to document the cultural habits of the residents of Denmark", and "[c]ulture is broadly defined, as the survey covers habits within the topics of culture, media and recreational activities, for example, concerts, performing arts, cinema, literature, exercise, digital games and hobbies." Some graphs also include indoor digital activities and, as mentioned above, attendance at sporting events under cultural activities. The scope of cultural policy may seem broad: The central division of the Danish Ministry of Culture, the Agency for Culture and Palaces, states that its ambition is to preserve, develop, and communicate art and culture for the benefit of all in society. However, social integration seems to be a prohibited area: The latest document available online describing the country's cultural policies points out that "there is no explicit Danish policy linking the overall aim of equal access to cultural life to broader issues of civic participation, citizenship, civil society development/cohesion."[28]

[26] Lombardo Ph. and Wolff L., *Cinquante ans de pratiques culturelles en France*. 2020, 1 (https://www.culture.gouv.fr/Media/Medias-creation-rapide/CE-2020-2_Cinquante-ans-de-pratiques-culturelles-en-France.pdf) and Compendium, "Short profile" of France, 2023, 2, 8 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/france/France_short_10_2023_final.pdf) (both last accessed May 10, 2025).

[27] Statistics Denmark; the page is even called "Cultural and recreational activities" (https://www.dst.dk/en/Statistik/emner/kultur-og-fritid/digital-adfaerd-og-kulturvaner/kultur-og-fritidsvaner. last accessed May 31, 2025).

[28] Statistics Denmark, "Cultural Habits Survey"

6.3. Social integration as the culture in spite of itself

Social integration as a paradigm provides meaning to "big surveys" on cultural participation presented in five countries. The fact that these are almost exclusively Eastern European countries is probably not insignificant: The question of cultural participation is undoubtedly posed differently here, in connection with a relatively recent need to reassert national identity and independence. In terms of survey titles, we note that all these countries refer to cultural participation—the word "culture" being taken in its broadest sense—and even, in the case of Romania, to democracy in its subtitle.

The first example: Estonia, where "one of the most important tasks of the state is to ensure that all Estonian residents have the opportunity to participate in the cultural activities and creative fields they are interested in, both as spectators and creators." In fact, this citation embraces both cultural democratization and democracy (and perhaps even casting an eye at the creative economy in the process). The results of the survey "make it possible to evaluate the effectiveness of national cultural policies by describing how the population's cultural participation and cultural consumption habits have changed," and "[b]ased on the results of the survey, the Ministry of Culture will implement policies and activities in the fields of the arts, cultural values, integration and sport." Integration is therefore clearly a component of Estonian cultural policy, with culture playing a multiple role: "culture increases people's well-being, supports their ability to cope, their mental and physical health, and contributes to the cohesion of society." Access to culture, and hence to society, must therefore logically be provided to all groups: "access to culture must be guaranteed regardless of special needs, place of residence, age, nationality, language skills, interests, abilities and other conditions."[29]

Lithuania even establishes a link between culture, integration, and citizenship, in a section of its survey publication dealing with "links between the issues of culture, citizenship of the public and social inclusion." This is a strong trend that influences or even limits the measurement of certain practices in the questionnaire: Library attendance is accompanied by a warning stating that "in this survey, involvement in public library activities is treated only as social participation; therefore, this report presents the percentage of those who tend to socially participate in public library activities." In a recent document on cultural policy, dating from 2024, what is termed the "creative empowerment" of each individual is subjected to the goal of strengthening national identity, which seems to prevail. Ultimately, Lithuanian cultural policy aims "at a creative empowerment of each and every member of society, focusing on ideas that would help Lithuania to become a modern, energetic country, embracing differences, and with a strong sense of national identity."[30]

Romania goes one step further, linking the population's cultural activities with citizenship and, ultimately, democracy. The publication of the 2022 survey is entitled "*Cultural Participation and Democratic Perspectives*," with chapters on the "effects of participation in cultural activities on the quality of life and social well-being" but also on "participation in cultural activities as one of the explanatory factors of democratic citizenship." According to the study, the results show "that cultural consumption practices are a stimulating factor for democratic citizenship," notably through the direct relationship between cultural participation and the "capacity to accumulate social capital through civic engagement" as well as the development of "values of openness to others, tolerance and social mobilization." The main objectives of Romanian cultural policy include not only cultural democratization, reaffirmed here, and the encouragement of cultural tourism, but also "the desire to preserve the values of the Romanian identity and the national minorities."[31]

(https://www.dst.dk/en/Statistik/dokumentation/documentationofstatistics/cultural-habits-survey#:~:text=The%20Cultural%20Habits%20Survey%20is%20an%20interview%20based%20quarterly%20survey,both%20in%20Denmark%20and%20abroad.), Ministry of Culture, 2024, page "Agency for Culture and Palaces" (https://slks.dk/english/) and Compendium, "Country profile – Denmark", 2012, 87 (https://www.culturalpolicies.net/wp-content/uploads/pdf_full/denmark/denmark_032012.pdf) (all last accessed May 31, 2025).

29 Compendium, "Short profile" of Estonia, 2022, 4 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/estonia/Estonia_short_122022-formatiert.pdf) and Ministry of Culture, "Kultuuris osalemise uuring näitab kultuurielus osalemise taastumist koroonaajast" (press release), online translation by the author (https://www.kul.ee/uudised/kultuuris-osalemise-uuring-naitab-kultuurielus-osalemise-taastumist-koroonaajast) (both last accessed May 31, 2025).

30 Lithuanian Council for Culture, *Participation in Culture and Satisfaction with Cultural Services in Lithuania 2020*; 2021, 6, 39, accentuated by author (https://www.ltkt.lt/docs/kulturos-tyrimai/2021/06/Participation-in-culture-and-satisfaction-with-cultural-services-in-2020-Lithuania-Summary.pdf) and Compendium, "Short profile" of Lithuania, 2024, 2 (https://www.culturalpolicies.net/wp-content/uploads/pdf_short/lithuania/Lithuania_short_012024.pdf) (both last accessed May 31, 2025).

31 National Institute for Cultural Research and Training, *Cultural Consumption Barometer* 2022, 2023, 9-10 (https://www.culturadata.ro/wp-content/uploads/The_

Finally, Poland also makes this link between participation in culture and society: Participation in culture—understood here quite broadly "both as using the artistic offer prepared by artists, cultural entities, non-governmental organizations, made available by the mass media, and as one's amateur creative activity", hence with an opening to cultural democracy—is an essential element of social life and individual well-being of every human being. It is this social purpose that, without a doubt, explains the presence of activities, such as participation in parties, social gatherings, club events, attending an amusement park, or going to an arcade, a casino, as cultural activities, listed alongside more institutional outings. A section of the questionnaire on collective memory examines interest in history, knowledge of a person's family history, and ways to celebrate Independence Day on November 11. An interesting question, the only one of its kind among the 15 questionnaires studied here, examines the features of a cultured person. The qualities suggested to respondents range from "going to the theatre, cinema" and "reading books, visiting the library" to aspects, such as "education," "cleanliness and neat dress," "ability to behave in any situation," and even "tolerance for other beliefs, race, religion," confirming a social and civic definition of culture. The qualities attributed to cultural participation are manifold, bordering on the creative economy: "research confirms that participation in culture has an impact on mood, sense of self-realization, subjective assessment of one's health, as well as the development of creativity and innovation."[32]

In Switzerland, a country with four linguistic and cultural areas located in the center of Europe, the statistical results of the "big survey" on cultural practices are published in a way that is very close to the canons of cultural democratization.[33] The survey is then adopted by cultural policy players in the sense of the social integration paradigm, making it more complex. In the pluriannual "Messages on Culture" that have been defining the direction of cultural policy at the national level in the country since 2012, culture is first of all presented, in 2012–2015, as an effective instrument of social integration and cohesion. Then, in 2016–2020, it also becomes an element of social peace: "strengthening involvement in cultural life should make it possible to calm social polarization and thus provide a decisive response to the challenges facing our multicultural society." Finally, in 2021–2024, a dimension of identity is added, but including diversity, in a country where diversity is a constituent element: "those who participate in cultural life become aware of their cultural roots, develop their own cultural identity and thus contribute to Switzerland's cultural diversity." It should also be remembered that the Swiss survey on cultural practices is linked to the surveys on language and religion.[34]

6.4. Creative economy as the call of the sea

Finally, in measuring cultural participation, some "big surveys"—a minority of two in our panel—subscribe to the creative economy paradigm. This paradigm tends to be used in cultural policies on the supply side, production, professionalization, or the status of artists. However, it can also become operational on the demand side, giving this term its full meaning. This is the case in Malta, albeit to a limited extent. According to the 2017 publication of the survey conducted in the wake of Valletta's nomination shortly prior as European Cultural Capital 2018, the cultural and creative sector has become an issue in the country's future: "when, late in 2015, Arts Council Malta launched its 5-year strategy for the cultural and creative sectors, it declared that its overall vision was to place the arts and creativity at the heart of Malta's future." While some of the key concepts of the creative economy ("cultural and creative sectors," "creativity") do not appear beyond the preface of this study otherwise devoted to the use of the internet for cultural purposes, reading and listening to music, attendance at institutions and events, and linguistic preferences (pointing toward social integration), this case is a rare example of a mainly discursive, even rhetorical, contextualization between a fairly classic survey and a rather recent and attractive paradigm.[35]

Cultural_Consumption_Barometer_2022_full.pdf) and Compendium, "Short profile" of Romania, 2022, 3 (https://www.culturalpolicies.net/wp-content/uploads/2025/01/Romania_short-cultural-policy-profile.pdf) (both last accessed May 31, 2025).

32 Statistics Poland, *Participation in Culture in Poland in 2019*; 2020, 4, 27, 37, 79, 81, 82 (https://stat.gov.pl/download/gfx/portalinformacyjny/en/defaultaktualnosci/3310/2/2/1/participation_in_culture_in_2019.pdf, last accessed May 31, 2025).

33 Cf. Federal Statistical Office (FSO), page "Pratiques culturelles" (https://www.bfs.admin.ch/bfs/fr/home/statistiques/culture-medias-societe-information-sport/culture/pratiques-culturelles.html, last accessed May 31, 2025).

34 Federal Office for Culture (FOC), *Message concernant l'encouragement de la culture ("Message on culture")* for the period 2012-2015, 2782 (https://www.fedlex.admin.ch/eli/fga/2011/455/fr), 2016-2020, 485, 490 (https://www.fedlex.admin.ch/eli/fga/2015/45/fr) and 2021-2024, 3130 (https://www.fedlex.admin.ch/eli/fga/2020/725/fr) (all last accessed May 31, 2025).

35 Arts Council Malta, *Cultural Participation. Survey 2016*; 2017, XI (https://artscouncilmalta.gov.mt/wp-content/uploads/2025/02/Cultural-Participation-Survey-2016.pdf, last accessed May 31, 2025).

In the UK, we observe the most advanced and, in this extreme form, the most solitary reading of cultural participation through the creative economy grid, the cradle of which is the UK itself. However, the survey is by no means the most comprehensive, nor the most in-depth (Table 6). Soberly entitled the "Participation Survey," its focus is broad: It measures the engagement of the population in the digital, culture, media, and sport sectors, sometimes also referred to, playing on the Ministry's acronym, as the Department for Digital, Culture, Media and Sport and digital sectors. In addition to the Ministry's multiple functions, its allegiance to the creative economy can be seen in the fact that engagement is systematically measured in both physical and digital terms, with an aggregate physical or digital total each time. Most countries consider digital practices to be at best a copy of, and at worst a threat to, immediate cultural practices, in line with the spirit of cultural democratization, which emphasized on confrontation with works (even if they are media-based: a film should preferably be seen in the cinema, etc.) and, more prosaically, on making the most of the costly stock of cultural facilities. The UK, however, puts these two channels on an equal footing, including for what is called here—another sign that is not misleading—the arts sector. This is a very wide sector, since it covers without further formality not only attendance at the theatre, live music or cinema, but also fashion shows, festivals or carnivals, as well as many private activities, such as reading and playing video games.[36] The aspects covered in the survey also go far beyond those contained in the surveys from other countries, including chapters on smart devices, 5G, digital or online training, data security, use of data, data sharing, and the management by individuals of methods of identification.

The UK survey also looks at participation in (or at least the awareness of) some of the biggest events and celebrations of the moment, such as the 2022 Birmingham Commonwealth Games, Her Majesty the Queen's Platinum Jubilee (70th birthday), and UNBOXED: Creativity in the UK. Described as a major event, the latter, created after the referendum on Brexit by the Conservative government and after several name changes (the public reportedly nicknamed it the "Festival of Brexit"), is a pure "creative economy" event, since its aim is not only art and culture, but also to entertain and integrate the population, and ultimately to encourage creativity and invest in regions of the UK that are usually disadvantaged in terms of cultural investment.[37] In line with this economic approach, cultural policy in the UK on cultural participation aims less at widening access or audiences from above or on the supply side than at stimulating greater arts access and attendance on the demand side. This is less in the sense of the cultural rights often invoked by countries, such as France, but rather by promoting an entitlement to benefit from opportunities to engage in or access culture and by empowering the vulnerable and economically deprived. Unsurprisingly, the programs or entities mobilized for this aim, "Find Your Talent, Cultural Education Challenge, Music Education Hubs, or Arts Marketing Association," often have names reminiscent of economic semantics.[38]

7. Conclusion

This article aimed to examine how cultural participation is measured across different countries and to observe whether national specificities underlie this syntagm that is seldom questioned. A close study of the 15 "big surveys" in Europe identified on this subject revealed sometimes considerable variations depending on their territorial location.

These differences are first and foremost observed in institutional terms. Born in the 1960s between cultural policies aimed at democratizing access to culture and the nascent sociology of art, surveys of cultural participation have gradually become autonomous, generally joining the ranks of official statistics. A significant number of these surveys are carried out by national statistical offices or mixed configurations of stakeholders. In a minority of countries, they are conducted from within the Ministry of Culture—particularly in France—and sometimes by public or, rarely, private institutes. The differences observed between surveys are then notable in terms of method. The sample size of the population surveyed ranges from 1 to 50 times, from just over 1,000 respondents in Romania to 50,000 in Italy, with most samples between 3,000 and

[36] It should be noted in passing that the most recently published figures show that, for the arts in 2022–2023, physical access is much higher (62% of the population) than digital access (27%), and that only 1% of people will have access only digitally, compared to (by subtraction) 36% exclusively physically (https://www.gov.uk/government/statistics/participation-survey-2022-23-annual-publication/main-report-for-the-participation-survey-april-2022-to-march-2023, last accessed May 31, 2025).

[37] Wikipedia, "Unboxed: Creativity in the UK" (https://en.wikipedia.org/wiki/Unboxed:_Creativity_in_the_UK#cite_ref-2, last accessed June 18, 2025).

[38] Department for Culture, Media & Sport and Department for Science, Innovation & Techhnology, page "Main report for the Participation Survey (April 2022 to March 2023)" 20.07.2023/13.02.2025 (https://www.gov.uk/government/statistics/participation-survey-2022-23-annual-publication/main-report-for-the-participation-survey-april-2022-to-march-2023) and Compendium, "Country profile – United Kingdom", 2020, 79 (https://www.culturalpolicies.net/wp-content/uploads/pdf_full/united_kingdom/unitedkingdom_032020.pdf) (both last accessed May 31, 2025).

10,000 respondents. Survey frequency also varies widely, from quarterly in Denmark to every 10 years in French-speaking Belgium, although many surveys are carried out every 2–5 years. These two aspects seem directly correlated with the survey's inclusion with a statistical office, a guarantee of regularity and solidity. Finally, there are also different ways of administering the questionnaire, with Eastern and Southern European countries preferring face-to-face questioning, while Central and Northern European countries favor online surveys.

We were then interested in the names of the "big surveys" and the range of activities covered. Behind the syntagm of cultural participation, which has now become internationally accepted and is used in around half of all cases, lie other national survey titles, referring either to cultural practices, a notion derived from the French-speaking tradition, or to cultural consumption, habits, or behaviors, implying different connotations in terms of the degree of routine or, on the contrary, agency of these activities. However, it is the variety of the practices covered that is striking. Cultural participation covers a wide range of national realities. Depending on the country, it oscillates sharply on a narrow–broad continuum for outdoor activities (from theatre to leisure, languages and aspects of citizenship) and on an old–new continuum for indoor or private practices, ranging from reading books, listening to music and practicing media to video games, ICT and even artificial intelligence.

While the big surveys enjoy relative autonomy[32] as part of the official statistics field, the latter also depends on states' need to govern by numbers.[33] To better understand all their implications, these national surveys need to be reinserted into the country's cultural policy paradigm. These paradigms are multifaceted as they spread over the past half-century, in parallel with the growing need to legitimize public spending on culture.

A significant number of the surveys studied—six out of the 15—are part of the classic cultural democratization paradigm born in the 1960s. The "big survey" is intended to help widen access to institutional cultural offerings, particularly in France, which is home to the flagship survey of this paradigm, the "*Pratiques culturelles des Français*." The step of incorporating cultural democracy, a paradigm that emerged in the 1970s and included amateur practices and wider cultural diversity, has only been explicitly taken by two countries, notably French-speaking Belgium, which has redesigned its questionnaire to better identify what makes culture for the majority who do not attend cultural institutions. The third paradigm, social integration, which appeared in the 1980s, inaugurates a certain instrumentalization of culture, while simultaneously following the concept's broad, anthropological meaning. Surveys from five countries are included here; almost all of them are from Eastern Europe, where the question of cultural participation is undoubtedly posed in different terms. Here, the "big surveys" focus on cultural participation as a factor of cohesion, citizenship, democracy, and national identity. Finally, the most recent paradigm, which emerged in the 1990s, re-reads culture in terms of the creative economy. This model, which pays more attention to the market, is mainly found in the UK, the cradle of this Anglo-Saxon paradigm. Here, the participation survey encompasses the entire population's engagement in the digital, culture, media, and sport sectors, equating physical and digital participation, and also covering major national festivals that combine creativity, entertainment, innovation, and marketing.

Ultimately, it is only by reinserting them into the symbolic territory of cultural policy paradigms and, more generally, into a geopolitics of cultural statistics whose contours could only be sketched out here, that the "big surveys" and the cultural participation they measure take on their full meaning. Moreover, analysis of the "big surveys" in their national territories opens up a number of fundamental questions.

The first question concerns the relevance and sustainability of this subject. The inventory of the 41 European countries initially covered by the study revealed the many ways, sometimes subtle or indirect, in which most countries quantify cultural participation: By using available administrative data, such as the number of admissions to cultural institutions, by including a few questions in national surveys on other subjects, by taking advantage of international surveys containing a restricted module on this theme, or even by combining several of these sources. In this light, we might question whether these "big surveys" on cultural participation are an endangered species, destined to be replaced by smaller, targeted, and agile forms of investigation. However, the very thematic focus of these "big surveys" and the possibility of deepening them as required, as well as the ease of repeating them identically to obtain a reliable picture of the evolution of practices, seem to justify their persistence. Their longevity also confirms this, as some have been in existence for over half a century, as in Denmark (1964) and France (1973).

Another question concerns the relationship between the national and international levels. In the age of globalization, the persistence of these "big surveys" confined to a single country may be questionable, suggesting that an international approach—such as the European Culture Eurobarometer, although the latest of which dates from 2017—could, or even should, replace them. These supranational surveys, carried out according to the same

standard methodology in all European countries, enable easy international comparison for practices constituting the lowest common denominator, but that is their only usefulness. They are both too cumbersome and too superficial a tool for countries wishing to investigate the practices of their population in depth, in line with their cultural definitions, methodological preferences, survey traditions, and cultural policy objectives. Nevertheless, even if limited in scope, a regular European survey on culture would make sense, if only because there are also cultural policy recommendations at the EU level.[34]

By definition, national "big surveys" are diverse, a feature that reflects their richness rather than posing a problem, as they focus on a single country and are mainly intended for internal use. They are useful for researchers, as we have seen, as well as the media, the interested public, and governments. This includes periods of political change: Potentially covering both cultural offerings, including major legitimate institutions, and more popular cultural forms and leisure activities, as well as broader aspects, such as citizenship, national values, and identity, these "big surveys" could also change, either in their use or in the questions themselves, during times of growing politicization of cultural policy. The recent increased polarization of the political landscape in several European countries will be an interesting test case in this regard. These "big surveys" serve and reinforce cultural policies and, ultimately, national governments, aspects that could not be explored in depth in this paper, but which could be the subject of subsequent studies.

A final question concerns the possible epistemological limits of these "big surveys." After all, what about emerging, marginal cultures, or those that are too small or short-lived to be detected by these surveys, which are by definition conducted on a large scale? And what about the quantitative perspective itself: Should it alone be employed to describe a subject as complex as the cultural activities and engagements of different population groups? One answer lies in the very moment of creating these surveys in France in the 1960s. Alongside the "big survey" of French cultural practices, the public authorities commissioned another survey in parallel. Entrusted to Michel de Certeau, this one was on a completely different level, ethnographic so to speak, in line with the emerging cultural studies. It aimed to identify, from below, the actual and varied, sometimes diverted or even subversive uses that individuals make of a variation of cultural objects. De Certeau's[35] research in the 1970s revealed the cunning consumption that creeps in anywhere, and popular reception as a welcome poaching of cultural works and institutions.

This original two-tiered approach thus appears to be a call to complete the "big surveys," useful for describing general trends and statistical correlations, with qualitative "small surveys" close to the users. Last but not least, they are needed to complement, but also to contradict, and ultimately, drive forward the "big surveys," so that they can take full measure of the complex processes at work when it comes to cultural participation.

Acknowledgments

The author, Olivier Moeschler warmly thank Nuné Nikoghosyan for her very comprehensive translation of the original French text.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

Further disclosure

An early version of this article was presented orally at the seminar "*Saisir les pratiques culturelles: enjeux, démarches, regards croisés*" (Capturing cultural practices: issues, approaches, intersecting perspectives) at the Université libre de Bruxelles (ULB) on March 26, 2024. It was updated, reconceptualized, and considerably expanded in spring 2025.

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Notes: [a]European Union countries (27); [b]candidates countries (10); [c]European Free Trade Association countries (4); *Countries with a "big survey" on cultural participation. All websites last accessed in May 2025.

ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Community arts and participatory engagement in a panda-themed environmental art initiative

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(This article belongs to the *Special Issue: Critical Posthuman Art and Communication*)

Abstract

Existing research recognizes art's role in environmental awareness, but seldom examines participatory art as both method and engagement. This study explores how participatory art practices can foster ecological awareness in the context of wildlife tourism. Conducted at the Chengdu Research Base of Giant Panda Breeding, the research invited over 1,000 tourists to draw circles representing their perceived relationships with nature, giant pandas, and pets—an activity inspired by Schultz's Connectedness to Nature (CNT) scale. Although the task was initially designed as a visual survey, it quickly evolved into a shared, creative experience that generated spontaneous participation, meaningful conversations, and emotional engagement. What began as a scientific investigation revealed itself to be an ecological art project. Participants were not merely data contributors but co-creators, offering their own cultural and personal narratives to the panda–human coexistence. Drawing from Timothy Morton's theory that art can foster non-coercive, relational experiences with the more-than-human world; this paper frames the drawing activity as an act of ecological art. Here, the giant panda is not simply a passive subject but an active participant in shaping a shared affective space, prompting reflections on conservation, interspecies coexistence, and emotional entanglements. This art-based approach illustrates how cultural and affective dimensions can be integrated into environmental communication through the engagement of both pandas and tourists. It highlights the value of participatory creativity as both a research method and a meaningful form of public engagement. As environmental challenges intensify, this study suggests that ecological art offers a promising pathway for fostering inclusive, grounded, and emotionally resonant environmental discourse. It contributes not only to research on CNT but also to the broader work of reimagining human relationships with the natural world.

Keywords: Community arts; Giant panda; Participatory creativity; Connectedness to nature; Tourists; Animal–human relation

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Citation: Guo Y. Community arts and participatory engagement in a panda-themed environmental art initiative. *Arts & Communication.* 2026;4(1):025160023. doi: 10.36922/AC025160023

Received: April 16, 2025

Revised: July 27, 2025

Accepted: August 14, 2025

Published online: September 8, 2025

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1. Introduction

I did not need to look up from the folding table on the camping trailer to sense the quiet shift in atmosphere. A small group of tourists had formed a quiet semicircle, their eyes fixed on two children, the paper they were drawing on, and the slow emergence of circles

and images. It was one of those rare, almost meditative moments in my fieldwork—one where structured research gave way to spontaneous participation.

The task itself was simple—participants were asked to depict their relationship with nature, the giant panda, and their pets using circles. As I neared the end of my data collection for the day, two children received the last remaining survey sets. What I had not anticipated was the magnetic effect their creativity would have. One by one, adults stopped—drawn in not by obligation but by something more instinctive: Curiosity, nostalgia, or perhaps a momentary reconnection with their own childhood creativity.

No one hurried away. They listened as I asked the final question—"Why do you draw your circles this way?"—absorbing the children's explanations. This was an environmental experience in its most natural and organic form: Not a lecture, not a signboard, but a shared, participatory experience. Art, creativity, and participatory observation led to quiet reflection.

The drawing survey had also been my most fulfilling data collection experience so far. The tasks led to conversations with participants, and the drawings were filled with surprises and unexpected interpretations. Along the way, the participants and I exchanged jokes and casual chats, making the process feel more interactive than transactional. In just a short time, I received immediate feedback: "This survey is really interesting," "This is very meaningful," "I enjoyed this so much."

In his book All Art is Ecological, philosopher Timothy Morton[1] argues that the experience of art provides a framework for fostering harmonious relationships between humans and non-human entities—an aspiration central to ecological ethics and politics. He further suggests that artistic experience cultivates ecological awareness by attuning us to a form of coexistence with the artistic object in a non-coercive manner. Ecological art practice, in this view, emerges through a sense of solidarity with non-human beings, allowing shared space and time with the non-human "other" to reshape human experience. Artistic practice, therefore, serves a dual function—it facilitates communication between humans and nature, and enables transformative processes, such as ecological and environmental awareness, to unfold.

From Morton's perspective, the drawing survey I conducted can be regarded as an ecological art experience in at least two significant ways. First, the drawing task was designed to evaluate tourists' perceived relationships with the natural world. This activity, though rooted in the goals of social science research, was artistic in nature. Second, the process of drawing—ultimately a form of art-making—fostered a transformative, collective experience that engaged the researcher, the panda, and participants in unexpected ways.

In the present age of the Anthropocene, where human bodies and human-made products dominate the Earth, the need for ecological communication and the cultivation of environmental awareness is more urgent than ever. Art has reemerged as a vital educational tool, promoting creativity, critical thinking, and global citizenship in the face of ecological and environmental challenges.[2-8] This renewed emphasis on artistic approaches to environmental education aligns with growing scholarly interest at the intersection of environmental communication and the visual arts.[9,10] It also invites us to reconsider non-human animals' connection and integration into our human world.

This study explores a visual, art-based research method inspired by the Connectedness to Nature (CNT) scale originally proposed by Schultz.[11] Schultz's[11] scale employs a visual measure—seven pairs of overlapping circles—to assess individuals' perceived connection to the natural world. Building on this approach, the present study investigates participants' connections to nature, giant pandas, and their pets through a participatory circle-drawing method conducted at the Chengdu Research Base of Giant Panda Breeding. The fieldwork involved collecting drawings from over 1,000 tourists, with the researcher actively engaging in and observing the artistic process. Like all acts of creation, this collective art-making experience generated meaningful moments for both participants, the researcher and, to a certain extent, the giant pandas. A mixed research method—combining a quantitative exploration of the relationship between creative circle drawing, visitor demographics, and visitor experience with a qualitative reflection of the researcher's own fieldwork—was employed to investigate the rich dataset generated. This paper aims to shed light on these ecological art practices by reflecting on how participatory creativity fostered environmental awareness within the context of conservation.

2. Literature review

2.1. Ecological art and participatory creativity

Ecological art is an interdisciplinary artistic practice that integrates ecological ethics and systems theory to examine the relationships between humans and the natural world.[5] Rather than simply representing nature or the environment, ecological art actively engages with ecological systems to generate both transformative artistic expressions and tangible ecological change.[5] Stoltz[12] differentiates ecological art from other forms of artistic

practice by emphasizing its direct interaction with physical ecosystems. In ecological art, artists establish relationships with the environment through processes of appropriation, regeneration, and coexistence—relationships that remain open-ended and continuously evolving.

Kagan[13] outlines several principles and characteristics that define ecological art, including connectivity, reconstruction, ecological ethics, environmental stewardship, non-linear (re)generativity, dynamic multi-level balancing, and diverse methodological approaches to engaging the intricate web of life. Connectivity involves attending to the complex interrelationships present in our environment across multiple dimensions. Reconstruction refers to the use of natural materials or the incorporation of environmental forces in the creation of artworks. Ecological ethical responsibility entails acts of reclaiming, restoring, and remediating damaged ecosystems. Environmental stewardship focuses on informing the public about ecological processes and the environmental challenges facing the planet. Non-linear (re)generativity encourages the reimagining of ecological relationships and the creative exploration of new possibilities for coexistence and sustainable mutuality. These interwoven aspects collectively shape the multi-layered experience of ecological art.

Clapp[14,p.1] argues that creativity is not an individual trait but a "socially distributed and participatory process." Participatory creativity shifts the emphasis from individual contributions to collaborative, group-based processes. Ecological art's emphasis on transformation and co-evolution with the natural world makes it inherently participatory. Simus[15] suggests that engaging in the creation, appreciation, and interpretation of environmental art contributes to the development of ecological citizenship, as participatory artistic processes reflect public environmental concerns and communal values.

A growing body of research has demonstrated how ecological art fosters community engagement, environmental awareness, and education.[16-18] For instance, Roe and Buser[18] describe a collaborative, arts-led research project that cultivates ecological citizenship and deepens understandings of human-nature entanglements. Mamur and Çelik[19] implemented an after-school art program for children aged 9–13 and found that participants' environmental knowledge and awareness significantly improved. Most notably, the program facilitated the emergence of a collective environmental consciousness—a product of the participatory creation process that, in turn, enhanced the children's creativity. Similarly, Rathwell and Armitage[20] demonstrated that ecological art practices contribute to social-ecological resilience by helping communities integrate diverse knowledge systems.

Importantly, recognizing and cultivating creativity within collaborative experiences is essential for ecological art to meaningfully impact both the natural world and human participants. Clapp[14] identifies six core principles that enable participatory creativity:

(i) Ideas are the creative agents;
(ii) Ideas evolve through artifacts over time;
(iii) Creativity is shared across diverse contributors;
(iv) Creative work has intention and purpose;
(v) There are many ways to be creative;
(vi) People play flexible and multiple roles.

Defining creativity through collaborative experiences also suggests that non-human agencies—more specifically, the giant pandas in this study—should be recognized as active participants contributing to the creation of tourists' artworks. In Naess's[21] notion of deep ecology, the presence of the giant panda serves as a source of inspiration for this collective collaboration. As the research will demonstrate, the pandas entered into the drawings through a dynamic process and in multiple ways. To expand the notion of participation further, Bennett[22] invites us to consider how "vital materiality" is embedded in our environmental experiences. The drawing thus becomes a nexus where these materials—bodies, perceptions, movements, and affect—intersect. The moments when and how the pandas were seen, and the meanings these encounters held for tourists, all became creative sources embedded in the artworks.

This study explores how ecological art aligns with these principles of participatory creativity by emphasizing collective engagement, ecological awareness, and process-oriented creation. In ecological art, the focus is not on the individual artist but on the development of ideas through participatory interaction. Collective environmental awareness thus becomes the creative force linking participants to the artwork. While the creative process unfolds over time, participatory creativity enables ongoing transformation. Ecological art is co-created by a diverse group of stakeholders—including artists, community members, and non-human agents—with the aim of transforming both the environment and those who engage with it. Stakeholders participate in various, often fluid roles throughout the process. In sum, ecological art grounded in participatory creativity offers a powerful means to experience and reimagine the human–nature relationship in the Anthropocene.

2.2. CNT and visual research methods

CNT refers to an individual's perceived sense of interconnection with the natural world.[23] Over the past two decades, a range of measures and scales has been

developed to conceptualize and assess the human–nature relationship through the inclusion of diverse variables.[23-26] Research on CNT has made significant contributions to the field of environmental psychology, offering robust evidence that interactions with nature can yield physical and psychological benefits.[26]

One of the most influential models in this domain is Schultz's[11] three-dimensional framework, which conceptualizes psychological inclusion in nature through cognitive, affective, and behavioral components. The cognitive dimension captures the perception of interdependence between self and nature; the affective dimension encompasses emotional closeness to and care for the natural world; and the behavioral dimension involves a personal commitment to act in environmentally responsible ways. This model continues to serve as a foundational reference for exploring how various dimensions of connectedness shape pro-environmental attitudes, values, and behaviors across different cultural and situational contexts.

In a recent synthesis of CNT research, Lengieza and Swim[26] categorized the literature into three main domains: Situational context, individual difference predictors, and internal psychological states. While empirical work has proliferated, they note a relative lack of theoretical development in the field. Similarly, Restall and Conrad[25] observed that only 4% of CNT studies have incorporated visual methodologies—such as participatory mapping—despite their potential to offer unique perspectives. They advocate for the use of geographical visualization as a promising approach in both research and practice, particularly in guiding environmental planning and protected area management.

Addressing the theoretical gaps in CNT research calls for innovative approaches—such as art-based methods and visual mapping—that can offer new insights. A growing number of studies have extended Schultz's visual conceptualization of the human–nature connection, demonstrating the strengths of visual tools in psychometric exploration,[27-29] enhancing inclusivity in participant sampling,[30,31] and serving as effective predictors for the inclusion of nature in self.[28,32-34] Furthermore, because CNT also entails a collective identity dimension—where humans and nature are envisioned as part of a shared community[35,36]—visual representation can facilitate cooperative action and produce direct benefits for communities.

The visual representation of human–nature connectedness thus supports participatory creativity by actively embodying its core principles. For example, in visualizing CNT, the central creative idea—interconnectedness between people and nature—becomes the catalyst for community engagement and collective understanding. The visual tools employed are artifacts that evolve over time, shaping and refining both the psychometric model and the conceptual framework.[27,34] Participatory creativity involves the contributions of diverse publics, as evidenced by the collaborative nature of many visualization studies. These efforts are intentional, aimed at fostering cooperation and encouraging community dialogue. Participants engage through various accessible means—such as interpreting, creating, or reflecting on visual representations—and their roles are fluid, shifting according to context and need.

The use of visual methods in CNT research aligns closely with ecological art practices, as both prioritize the exploration of human–nature relationships and aim to foster transformative experiences within communities. When visual creation is framed as an integral part of an ecological art project, the case studies discussed earlier in this paper take on new interpretive significance. In the following section, I present both visual data collected in the field and my own reflexive insights as a researcher-participant to illustrate how these processes facilitate shared creativity and deepen CNT.

3. Research method

3.1. Visual image collection

3.1.1. Site selection and data collection

Visited by over 12 million people in 2024[37]—an average of approximately 33,000 visitors per day—the Chengdu Research Base of Giant Panda Breeding (commonly known as the Panda Base) remains one of the most popular tourist attractions in Chengdu, the capital city of Sichuan province in southwestern China. For several consecutive years, TripAdvisor has consistently ranked the Panda Base as the top destination among the "10 Must-Visit Attractions in Chengdu."

Between December 2024, and January 2025, a 2-month field survey was conducted at two key locations within the Panda Base: The main entrance/exit area and the Villa No. 2 giant panda enclosure. The survey collected responses from approximately 1,200 voluntary and randomly selected visitors. Data collection was carried out alternately by the principal researcher and one research assistant. To ensure data quality, the researcher conducted an unannounced visit to supervise the assistant's data collection sessions. After excluding incomplete or illegible responses, a total of 1,188 valid surveys were retained and subsequently recorded using Wenjuanxing, a Chinese online survey platform.

3.1.2. The study design

The survey was printed on A4 paper, double-sided, and comprised a total of 12 questions. The first page included

an informed consent item, followed by three demographic questions, two questions related to the visitors' experience at the site, one item concerning pet ownership, and three emoji-assisted 5-point Likert scale questions measuring pro-environmental awareness and personal well-being.

The second page featured three visual prompts (Figure 1), each depicting a central image: A flower, a pet dog, and a giant panda. Accompanying each image was a prompt that invited participants to draw a circle representing themselves in relation to the subject. For instance, the prompt for Image A read: "The flower represents nature. In this frame, please draw a circle representing yourself to describe your relationship with nature."

In this study, the dog symbolized pets in general, the flower referred to nature, and the giant panda represented animals in captivity. On-site instructions were also provided by the researcher and the research assistant for participants who had difficulty understanding the drawing task.

The survey design was informed by connectedness to nature index (CNI) surveys, but was deliberately kept concise. Based on the researcher's prior field experience, lengthy questionnaires often led to participant complaints and a subsequent decline in data quality. The circle-drawing task was inspired by studies, such as Martin and Czellar[27] and McConnell and Jacobs.[34] Furthermore, previous experiences—where tourists expressed reluctance to draw a giant panda due to a perceived lack of artistic skill—motivated the adaptation of this simplified visual approach using circles.

3.1.3. The coding process

After all surveys were uploaded to Wenjuanxing, the researcher and her research assistant began coding the drawings. The coding described each circle drawing in terms of its spatial relationship to the central image (categorized as: Encircling, overlapping, embedded, touching, separate-close, separate-medium, separate-distant, and corner), its orientation (up, upper-right, right, lower-right, down, lower-left, left, upper-left, and center), and its size (small, medium, large).

In addition, many tourists included creative elements beyond the instructed circle drawings. Canvases featuring such creative expressions were marked for further attention. These creative elements form the central focus of this study. Although the researcher actively engaged in conversations with participants during the fieldwork, these oral exchanges were not thoroughly documented due to the lack of appropriate recording tools. Some shorthand notes were written in the margins of the survey forms, but these were not digitized for further analysis. Drawings that included creative elements were marked with a "Y" in the coding book.

This study also examined how these creative expressions emerged and how they relate to or interact with the instructed circling task.

3.2. Reflexivity

Qualitative research has long emphasized the importance of researcher reflexivity as a key methodological component.[38-41] Fook[38] defines reflexivity as the process by which researchers critically assess their own assumptions and actions to understand how these influence research outcomes. When researchers actively reflect on their practices with the intention of change or improvement, reflexivity becomes a research method in itself.[38] Fook[38] also highlights that the interaction between researchers and participants is a crucial component of reflexivity, as the research process is co-constructed by both parties. Palaganas *et al.*[40] view reflexivity as a journey that transforms the researcher through shifts in epistemology, methodological challenges, and personal insights.

In art-based studies, reflexivity and the research process are often seen as mutually reinforcing. For example, Skukauskaite *et al.*[42] suggest that reflexivity through art allows researchers to transcend their backgrounds and contexts, creating new opportunities for self-understanding and research development. Bogumil *et al.*[43] showed that art can serve as a medium through which students cultivate reflexivity in their qualitative research experiences. Building on a Hegelian framework, Feige[44p.133] posits that art itself can be considered a form of "reflexive practice."

In the context of this study, framed as an ecological art project, the researcher's reflexivity is aligned with both the core principles of participatory creativity and the transformative nature of situated inquiry. On one

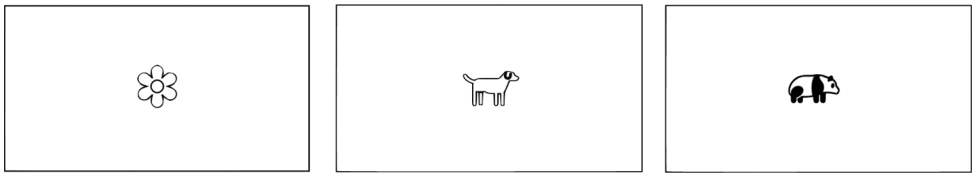


Figure 1. Drawing canvas for nature, pet, and giant panda

hand, participatory creativity arises from dynamic, social, and material interactions among people, non-human participants, and environments, illustrating that the researcher can take on multiple, fluid roles in the creation process. Reflexivity, as discussed above, deepens participants' engagement and learning. On the other hand, ecological art, rooted in systems thinking and ecological ethics, necessitates reflexive embodiment within a network of human and non-human agencies.

4. Results

This section presents both descriptive and inferential findings based on participants' demographic profiles, creative engagement in the drawing tasks, and statistical relationships among key variables.

4.1. Overview of data and creative arts

Table 1 presents an overview of the demographic profiles of the 1,188 participants. It is important to note that this study employed a selective approach to participant sampling. For instance, individuals under the age of 18 and over the age of 55 were actively encouraged to participate through on-site invitations.

Table 2 illustrates the inclusion of creative elements in the circle drawings for each canvas. It is evident that participants produced the most creative drawings in response to the panda canvas, followed by the nature and pet canvases.

4.2. Creative drawings in relation to demographic and situational variables

To explore how demographic differences and visitation experiences contributed to the creative drawings, binary logistic regression was performed. According to Schober and Vetter[45] logistic regression is used to estimate the association between one or more independent variables and a binary dependent variable. In this study, whether participants engaged in creative art drawings served as the dependent variable, while demographic features and visitation experiences functioned as independent variables contributing to changes in the outcome. All data were imported into the Statistical Package for the Social Sciences version 26.0.0.2 (IBM, United States of America) for analysis.

Table 3 shows that pet ownership significantly influenced participants' creative drawings for the nature canvas. Individuals with pets (b = −0.391, p=0.019, Exp(b) = 0.677) were significantly more likely to engage in creative drawing with nature. All other variables had p>0.05, indicating they did not significantly affect the likelihood of producing a creative drawing. However, the model was significant overall for age groups (Chi-square = 16.366, degrees of freedom [df] = 5, p=0.006). The model's predictive power was limited, explaining only 2.3–4.1% of the variance in the outcome (Cox and Snell R^2 = 0.023, Nagelkerke R^2 = 0.041).

Table 4 reveals that age (p=0.000) and visitation stage (Chi-square = 6.285, df = 2, p=0.043) were statistically significant predictors of creative drawing. Participants

Table 1. Demographic profiles of participants

Variable	Values (modalities)	Code	Structure		Type of the variables
			f_i	Percentage	
Age	<18	1	121	10.2	NV
	18–25	2	282	23.7	
	26–35	3	452	38.0	
	36–45	4	115	9.7	
	46–55	5	97	8.3	
	>55	6	121	10.2	
Gender	Male	1	411	34.6	NV
	Female	2	777	65.4	
Place of residence	First-tier cities	1	171	14.4	NV
	Sichuan	2	209	17.6	
	Other	3	808	68.0	
Visiting frequency	1st-time visitor	1	970	81.7	NV
	Returned visitor	2	218	18.3	
Visitation stage	Entering	1	241	20.3	NV
	At the enclosure	2	649	54.6	
	Leaving	3	298	25.1	
Pet ownership	Yes	1	433	36.4	NV
	No	0	755	63.6	

Notes: f_i: Frequency; NV: Nominal variable.

Table 2. Use and distribution of creative arts in three circle drawings

Prints	Creative arts	Structure	
		f_i	Percentage
	Y	178	15
	N	1,010	85
	Y	208	18
	N	980	82
	Y	64	15
	N	370	85
	No pets	754	63

Note: f_i: Frequency.

Table 3. Binary logistic regression of creative drawings for the nature canvas

Values (modalities)	*b*	S.E.	Wald	df	Sig.	Exp (*b*)	95% C.I. for Exp (*b*)	
							Lower	Upper
Age (ref: >55)	-	-	16.366	5	0.006	-	-	-
<18	−0.002	0.372	0.000	1	0.996	0.998	0.481	2.071
18–25	0.509	0.295	2.976	1	0.085	1.664	0.933	2.969
26–35	−0.239	0.296	0.653	1	0.419	0.787	0.441	1.406
36–45	−0.388	0.401	0.939	1	0.333	0.678	0.309	1.488
46–55	−0.228	0.403	0.321	1	0.571	0.796	0.362	1.752
Gender (ref: Female)	-	-	-	-	-	-	-	-
Male	−0.049	0.175	0.077	1	0.782	0.953	0.675	1.343
Residence (ref: Other)	-	-	2.655	2	0.265	-	-	-
First-tier	0.326	0.225	2.104	1	0.147	1.385	0.892	2.152
Chengdu	−0.105	0.241	0.191	1	0.662	0.900	0.562	1.442
Visiting frequency (ref: Returned)	-	-	-	-	-	-	-	-
1st-time visitor	−0.051	0.230	0.050	1	0.824	0.950	0.605	1.491
Visitation stage (ref: Leaving)	-	-	1.455	2	0.483	-	-	-
Entry	0.298	0.256	1.352	1	0.245	1.347	0.815	2.225
At the enclosure	0.213	0.217	0.966	1	0.326	1.237	0.809	1.891
Pet ownership (ref: Yes)	-	-	-	-	-	-	-	-
No	−0.391	0.167	5.492	1	0.019	0.677	0.488	0.938
Constant	−1.669	0.382	19.117	1	0.000	0.188	-	-

Notes: Model summary: −2 log likelihood=975.742; Cox and Snell R^2=0.023; Nagelkerke R^2=0.041.
Abbreviations: C.I.: Confidence interval; df: Degrees of freedom; S.E.: Standard error; Sig.: Significance.

aged 18–25 were approximately 2.44 times more likely to produce a creative panda drawing than those aged over 55. While the visitation stage had a significant overall effect, individual categories did not show significance on their own. Gender (b = −0.298, p=0.081, Exp[b] = 0.742) exhibited a trend-level effect, suggesting that males might be less likely to create a creative drawing on the panda canvas. Residents from first-tier cities (b = 0.415, p=0.052, Exp[b] = 1.515) were also more likely to engage creatively in this project. The model explained about 3.3–5.4% of the variance in outcomes.

Table 5 shows that none of the predictors tested significantly influenced the likelihood of creating a creative drawing on the pet canvas. The model explained very little variance in drawing creativity related to pets. This suggests that creative drawings with pets may be more influenced by individual, affective, or momentary experiential factors, rather than by the demographic and situational variables measured in this study.

While this study centers on the creative and participatory dimensions of ecological art, questions related to shifts in pro-environmental awareness and personal well-being are addressed more fully in a related project, where these themes emerged more clearly through spatial and orientation-based analysis.

4.3. Reflexivity and creative drawings

Unlike the structured questionnaire I administered in the field, the circle drawing activity—conceived as an ecological art project—proved to be a transformative experience for me, with participants' creative drawings standing out as a particularly meaningful highlight. During my time in the field, I had the opportunity to observe these drawings closely and engage participants in conversation whenever something piqued my interest. Initially, I believed that, as a researcher, I should maintain a certain distance from participants and allow them the space to express themselves freely through their drawings. However, I soon realized that these drawings were not only personal expressions but also contributions to a collective research endeavor, intended to be shared with both myself and the broader academic community. This realization prompted me to incorporate brief communicative sessions with participants, asking them to explain the meanings behind their drawings.

One especially memorable instance involved a young man who was just leaving the Panda Base. I asked him

Table 4. Binary logistic regression of creative drawings for the panda canvas

Values (modalities)	*b*	S.E.	Wald	df	Sig.	Exp (*b*)	95% C.I. for Exp (*b*)	
							Lower	Upper
Age (ref: >55)	-	-	24.060	5	0.000	-	-	-
<18	0.255	0.378	0.455	1	0.500	1.290	0.616	2.704
18–25	0.894	0.304	8.660	1	0.003	2.444	1.348	4.431
26–35	0.210	0.300	0.491	1	0.484	1.234	0.685	2.221
36–45	−0.306	0.410	0.560	1	0.454	0.736	0.330	1.643
46–55	−0.037	0.404	0.008	1	0.927	0.964	0.437	2.128
Gender (ref: Female)	-	-	-	-	-	-	-	-
Male	−0.298	0.171	3.042	1	0.081	0.742	0.531	1.038
Residence (ref: Other)	-	-	3.812	2	0.149	-	-	-
First-tier	0.415	0.214	3.776	1	0.052	1.515	0.996	2.303
Chengdu	0.048	0.222	0.046	1	0.830	1.049	0.679	1.621
Visiting frequency (ref: Returned)	-	-	-	-	-	-	-	-
1st-time visitor	−0.251	0.210	1.430	1	0.232	0.778	0.516	1.174
Visitation stage (ref: Leaving)	-	-	6.285	2	0.043	-	-	-
Entry	−0.178	0.259	0.476	1	0.490	0.837	0.504	1.389
At the enclosure	0.310	0.198	2.448	1	0.118	1.364	0.925	2.012
Pet ownership (ref: Yes)	-	-	-	-	-	-	-	-
No	−0.037	0.161	0.051	1	0.821	0.964	0.703	1.322
Constant	−1.780	0.375	22.531	1	0.000	0.169	-	-

Notes: Model summary: −2 log likelihood=1062.425; Cox and Snell R^2=0.033; Nagelkerke R^2=0.054.
Abbreviations: C.I.: Confidence interval; df: Degrees of freedom; S.E.: Standard error; Sig.: Significance.

why he had drawn his circle to the left of the panda figure when most participants placed theirs on the right. With a laugh, he explained that he had only managed to see the back of the pandas during his visit. This moment of shared humor highlighted the nuanced, affective responses that structured questionnaires often fail to capture—insights revealed not through ticked boxes, but through art and dialogue. In some cases, participants drew a fence between the giant panda and the circle—or creatively placed the circle outside the boundaries of the canvas—offering a visual metaphor for the visitor experience. When I asked a young woman about the zigzag line she had drawn between the panda and the circle, I began to realize that the physical barriers present at every panda enclosure had become a symbolic and embodied aspect of the panda-viewing experience.

Guided by my Western academic training, I initially expected the circle drawing exercise to yield results similar to those documented in previous studies,[e.g.27,34] grounded in the philosophical paradigm of the CNI. However, time and again, participants shared alternative narratives—rooted in their lived experiences and shaped by Chinese cultural and philosophical traditions—that added new layers of meaning to their drawings. In the nature canvas, several participants began by drawing a small circle inside a flower and a larger circle surrounding it. They explained that the drawing represented the concept of *tianren heyi* (天人合一)—the unity of heaven and humanity—and a state of coexistence expressed as "I am in nature, and nature is in me" (我在自然中，自然中有我). One elderly male participant elaborated that his drawing, in which eight small circles surrounded a central flower, symbolized the Eight Trigrams (*bagua*), representing a harmonious and balanced existence within nature's energetic field. Living in harmony with nature emerged as a recurring theme in participants' interpretations—a reflection of enduring Confucian ideals still prevalent in contemporary Chinese society.[46,47] As the fieldwork progressed, it became increasingly clear that returning to the foundations of Chinese philosophy and cultural context was essential for a fuller understanding of the participants' artistic expressions and the meanings they conveyed.

Pet owners, in contrast, were eager to talk about their animals, and many conversations began with my question, "Do you have a dog or a cat?" or the participant's correction: "The canvas shows a dog, but I have a cat—a big, fat one—at home." Owners frequently expressed deep affection for their pets, using symbols, such as hearts, hands, and arrows,

to convey their emotional connection. Some drawings featured a line linking the circle to the dog, symbolizing the leash as a medium of connection and control. Across these visual elements, participants reflected on their sense of responsibility toward their pets and emphasized the role of animals as integral members of their families.

5. Discussion

5.1. Data and ecological art

The past 2 decades have witnessed the growth of creative tourism globally, as the industry shifts its focus from tangible sites to the intangible heritage of destinations. Li and Shaw[48] note that creative tourism builds on the creative economy, emphasizing tourists' participation, co-creation, and cultural exchange over passive consumption. The binary logistic regression analysis (Tables 4 and 5) demonstrates that demographic features and visitation experiences at the Panda Base influence the production of creative ecological art by tourists. While age emerged as a prominent factor affecting tourists' participatory creativity with images of nature and the giant panda, situational factors, such as visitation stages, also played a critical role, particularly in relation to the giant panda drawings.

The creativity contributed by the 1,188 participants significantly transformed the survey into an ecological art project, enjoyed by numerous stakeholders. The statistical results reveal that participants experienced ecology and the environment through a sense of connectivity, which, in turn, shaped how they perceived and visually engaged with nature, the giant panda, and pets. The drawing task provided an opportunity to materialize this relational act, allowing participants to explore human–animal–place connections. Across the act of drawing, tourists reimagined and reconstructed the images based on their own experiences, allowing many to derive meaning from the activity. This meaningful engagement facilitated the cultivation of stewardship through personal relevance, as the artistic practice became a method for informing, making sense of, and internalizing ecological responsibility.

The tables demonstrate that creativity in ecological art does not follow a single, linear path but instead varies across diverse personal conditions, reinforcing a non-linear engagement. This result also highlights that creativity is not solely personal or individual but shared and emergent within social and ecological contexts, collectively shaped by diverse contributions. The idea—visualizing one's relationship with nature, the panda, and pets—served as the creative agent, with different tourists bringing varied motivations and capacities to the art-making process. Both the participants and the researcher played flexible roles as

Table 5. Binary logistic regression of creative drawings for the pet canvas[a]

Values (modalities)	*b*	S.E.	Wald	df	Sig.	Exp (*b*)	95% C.I. for Exp (*b*)	
							Lower	Upper
Age (ref: >55)	-	-	4.271	5	0.511	-	-	-
<18	−0.560	0.621	0.814	1	0.367	0.571	0.169	1.928
18–25	0.050	0.463	0.011	1	0.915	1.051	0.424	2.603
26–35	−0.257	0.459	0.314	1	0.575	0.773	0.315	1.901
36–45	−1.336	0.829	2.597	1	0.107	0.263	0.052	1.335
46–55	−0.108	0.602	0.032	1	0.858	0.898	0.276	2.920
Gender (ref: female)	-	-	-	-	-	-	-	-
Male	−0.334	0.304	1.204	1	0.273	0.716	0.395	1.300
Residence (ref: Other)	-	-	0.418	2	0.811	-	-	-
First-tier	0.079	0.391	0.041	1	0.840	1.082	0.503	2.330
Chengdu	0.241	0.376	0.413	1	0.521	1.273	0.610	2.657
Visiting frequency (ref: Returned)	-	-	-	-	-	-	-	-
1st-time visitor	−0.124	0.375	0.109	1	0.742	0.884	0.424	1.843
Visitation stage (ref: Leaving)	-	-	0.689	2	0.708	-	-	-
Entry	−0.273	0.446	0.376	1	0.540	0.761	0.318	1.823
At the enclosure	0.026	0.357	0.005	1	0.941	1.027	0.510	2.066
Constant	−1.343	0.606	4.903	1	0.027	0.261	-	-

Notes: [a]The sample pool of Table 5 comprises 433 pet owners from the study. Model summary: −2 log likelihood=354.048; Cox and Snell R^2=0.020; Nagelkerke R^2=0.035.
Abbreviations: C.I.: Confidence interval; df: Degrees of freedom; S.E.: Standard error; Sig.: Significance.

the idea evolved through the drawings. For example, the research began with the aim of understanding tourists, but the sharing of their lived experiences with nature ultimately transformed the researcher's role. It became clear that the researcher, too, was a participant in this ecological art, experiencing its transformative power firsthand.

5.2. Affective and cultural dimensions of ecological art

The diversity and creativity participants brought to this art project touched me on both affective and cultural levels that I had not encountered in previous questionnaire-based fieldwork. As the drawing practice unfolded, I found myself increasingly enjoying this space where random tourists paused to observe and visualize their relationships with animals and the environment. This activity connected me more closely to the creative process, gradually transforming my role from a social scientist to a co-creating artist. I became deeply engaged—the ecological art emphasized interdependence, creating a web of meanings and relationships that drew me in. The participants invited me into their imaginative and emotional worlds, where laughter, amazement, surprise, and depth were shared.

This shift was challenging—I began to realize that, despite my years of active data collection and fieldwork, few of my previous studies had captured the richness that this lived art project afforded. For one, I was confronted with my cultural roots and traditions; despite the popularity of the CNI and its Western ecological and psychological frameworks, I found their limitations in the Chinese context. While the participants lived through Chinese culture and philosophy daily, it had not initially occurred to me that these perspectives—and their subtle influence on how people relate to nature—should be considered in my research framework. As participants reflected on themes of harmony, relationality, and balance through Chinese symbols and idioms, I found myself reconnecting with these values. The drawings and interviews of the participants reflect everyday understandings of nature, which may include cultural symbols, such as "the unity of heaven and humanity" (天人合一). These references are used to enrich the interpretation of participatory behavior and do not promote any particular cultural stance.

In addition, the drawing project prompted me to reconsider my own research and academic training, which emphasized the researcher's role as objective and observational. Before long, I found myself asking tourists why the circles in their drawings were placed a certain way rather than another. This artistic process encouraged me to cross boundaries and engage with my participants. Positioned as a co-creator, I began to view the project as an art-based, culturally grounded, and emotionally attuned process, one that made sense to both the participants and me.

While this study centers on participatory art as an embodied and affective mode of engaging with wildlife, it also aligns with the broader conversations on how human–animal relations are spatially mediated and made visible. Recent studies in environmental mapping and disease ecology have demonstrated the value of remote sensing technologies in identifying ecological risk zones and understanding multispecies interactions across landscapes.[49,50] These tools offer powerful technology-driven perspectives on animal health, vector dynamics, and habitat characteristics, often guiding surveillance and management strategies. In contrast, the participatory drawing activity explored here operates from the bottom up, capturing situated, emotional, and imaginative responses to animal presence in a specific place. By placing these perspectives in dialogue, this research suggests that creative, ground-level engagements with animals, such as the giant panda, can complement data-driven mapping approaches—especially in designing culturally responsive, community-informed models for conservation and sustainable tourism.

6. Conclusion

At the start of designing this survey, I was curious about how people would draw circles around images, such as nature, pandas, and pets. However, the research process revealed that I could not simply describe it as a scientific investigation. Instead, alternative methodological terms were needed to understand the affective and emotional moments shared by my participants and me. Ecological art and participatory creativity seem to capture the most enjoyable aspects of this study while demonstrating that the patterns of art are both accessible through science and necessary for understanding the human–nature connection.

Reflecting on my research as an ecological art project, I now see that its embodied, affective, and participatory dimensions were not simply supplemental to the scientific inquiry but central to it. By viewing both participants and giant pandas as co-creators in a shared process of meaning-making, this project shows that the panda was not a passive object of conservation but an active presence—one that inspires, shapes, and even intervenes in human perception and behavior. Given the critical conservation status of the species and the increasing challenges faced by the animal, such participatory and creative methods offer new pathways for fostering public awareness and emotional investment. As the anecdote in the introduction suggests,

this drawing experience proved not only engaging for children, students, parents, and the elderly but also meaningful in helping them reflect on coexistence with wildlife. A critical, situated art practice has the potential to support conservation beyond education or outreach; it can foster alternative ways of knowing and relating to wildlife, opening up new collaborative methodologies that benefit the panda, the organization, and the broader public. In doing so, it contributes to a shift from conservation as control toward human-nature harmonious coexistence.

Beyond providing empirical insights, the drawing activity itself emerged as a practical and accessible form of ecological art, allowing tourists to engage more deeply with their encounters with animals and nature. In turn, the giant pandas entered the scenarios of art creation through their presence and moments of encounters with tourists. Collectively, the human and non-human participants illustrated how the motif of human-nature harmony and wildlife conservation shaped the ecological imaginaries of Chinese participants. Using participatory creativity, they depicted the human-nature-panda relationship through notions of conservation and coexistence in a shared world. Individually, each participant and panda was recognized as a co-creator, not a passive respondent, contributing their personal history and context to the project.

This study shows that ecological art, performed through participatory creativity, can be a powerful tool for generating new knowledge and fostering inclusive, culturally grounded environmental discourses. In the context of wildlife tourism in China, such practices hold the potential to enrich public discourse on human–animal relations and inspire more inclusive, emotionally resonant approaches to sustainable tourism management. By foregrounding the affective and relational dimensions of tourist engagement, participatory art may complement the notion of ecological civilization in China, strengthening the public's empathy, reflection, and shared responsibility towards nature and the environment.

As environmental crises accelerate, it is increasingly important to consider the potential of ecological art. Grounded in cultural context and emotional resonance, ecological art and participatory creativity offer promising pathways for deepening public engagement, advancing ecological awareness, and building more just and reciprocal relationships with the more-than-human world. Future studies could extend this approach to different conservation, cultural, and demographic settings. While the results of this study contribute to present research on CNT, they also support the ongoing work of reconnecting humans with the places, animals, and natural world that sustain us.

Acknowledgments

This study was made possible by the contributions of 1,188 participants, as well as the presence of nature, giant pandas, and pets. Special thanks are extended to Xuechun Wang for her support during the fieldwork.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Ethical review and approval were waived for this study in accordance with the Measures of the People's Republic of China (PRC) Municipality on Ethical Review (https://www.gov.cn/zhengce/zhengceku/2023-02/28/content_5743658.htm, accessed on 26 November 2024). Informed consent was obtained from all participants prior to participation. For minors (under 18 years), their legal guardians were present during the consent process and provided consent.

Consent for publication

All data have been fully anonymized, and only aggregated statistical results are presented in this manuscript. As no personally identifiable information is included, a separate consent for publication was not required in accordance with ethical guidelines.

Availability of data

The data supporting the findings of this study are available from the author upon reasonable request.

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Archival materials from the Terezín Ghetto: Authentic children's creations

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Abstract

Children's writings from the Terezín Ghetto embody both historical testimony and literary creativity. These texts reveal how young authors documented daily life while imaginatively responding to trauma, preserving voices that resonate as cultural as well as historical records. The main aim of this paper is to highlight the literary creations made by children and adolescents interned in the Terezín Ghetto as both historical records and works of literature. These texts, preserved thanks to the efforts of adults, invite historically situated readings that engage with the ghetto environment while also revealing expressive strategies and imaginative responses to trauma. Through qualitative content analysis combined with attention to literary devices, we examine three texts published in *Vedem*—reproduced in their entirety—and show how they document lived conditions while also shaping meaning through metaphor, imagery, and narrative perspective. The study demonstrates that these writings function as "living archival material," as they preserve factual traces of ghetto life while simultaneously resisting reduction to mere testimony by asserting aesthetic and cultural value.

Keywords: Terezín Ghetto; Authentic children's creations; Archival material; Content analysis; Reflection; Experience

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Citation: Mašát M. Archival materials from the Terezín Ghetto: Authentic children's creations. *Arts & Communication*. 2026;4(1):025310074. doi: 10.36922/AC025310074

Received: August 01, 2025

1st revised: August 12, 2025

2nd revised: August 25, 2025

Accepted: August 27, 2025

Published online: September 8, 2025

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

The main aim of this paper is to show that literary texts created by children and adolescents behind the walls of the Terezín concentration camp can be regarded as valuable archival material to explore this historical phase. At the same time, they deserve attention as works of literature, shaped by expressive choices and imaginative strategies rather than serving merely as factual records. These texts can stimulate public interest in the Shoah, especially through the internalization of the emotions and experiences they convey.

The motivation for this study stems from the observation that relatively little research has approached these texts in this dual way. Scholarly reception has often concentrated on their potential for Holocaust[1] education, addressing different age groups, while their literary qualities have remained underexplored. Literature from concentration

[1] Terminological choices, including the synonymous use of Shoah and Holocaust, follow established scholarship.

camps, including the writings of Holocaust survivors, often reflects on experiences of hunger, forced labor, and the psychological toll of camp life.[1,2] Children's texts from *Vedem* are especially significant in this respect, as they documented lived conditions, gave voice to internal states, and preserved cultural practices under coercion.

In this paper, three texts are analyzed— Zdeněk Ornest's "Just a Little Warmth" (*Trochu tepla*), Jiří Bruml's "Fate" (*Osud*), and the anonymous "Eyes" (*Oči*)—chosen for their thematic breadth. Each piece is reproduced in its entirety below. These works are examined through content analysis, coded for themes such as hunger and cold, status reversal, and moral recognition. In addition, selected literary devices—metaphor, imagery, and narrative perspective—that shape the presentation of these experiences are highlighted. Finally, the findings are situated in relation to ghetto social conditions and to debates on "authenticity" and interpretation in archival studies.

In this article, the terms "Shoah" and "Holocaust" are used synonymously, following contemporary usage in Holocaust studies.[2]

2. Methodology

The source material for our analysis is the digitized version of the *Vedem* magazine, which is freely accessible online. This clandestinely published journal from the Terezín Ghetto contains numerous literary and artistic works that reflect the lived experiences and emotional states of those subjected to internment in the concentration camp. These texts are not only historically significant documents but also creative expressions that reveal how young authors responded to their circumstances through narrative and poetic form.

2.1. Definition of key terms

Archival materials are records that document conditions, practices, and experiences, even when conveyed in literary or artistic form. Authenticity is understood not as a guarantee of factual accuracy, but as provenance and direct connection to the original source. In presenting translations, original spelling and punctuation are preserved where possible, with only minor normalization for readability.

Terms such as *Muselmann*[3] and *Ghettowachmann*[4] are italicized at their first occurrence and defined for clarity.

The main limitation is that these texts were shaped both by their literary character and by subsequent editorial processes of preservation, translation, and digitization, which inevitably influence how they are accessed and interpreted today.

2.2. About the *Vedem* journal

The journal *Vedem*, produced clandestinely in the Terezín Ghetto, represents a significant cultural and literary document of the Holocaust era. It reflects the unique environment and experiences of its young creators. Terezín, established by the Nazis as a ghetto, served multiple roles, including that of a propaganda tool designed to mislead international observers about the true nature of Nazi atrocities. Despite the harsh conditions, the ghetto became a hub of cultural activity: prisoners attended lectures, concerts, and theatrical performances, which were officially tolerated but functioned as acts of spiritual resistance. Within this vibrant but precarious cultural life, the production of *Vedem* enabled the prisoners—especially the youth—to maintain a sense of identity and dignity in the face of dehumanization.[5]

According to Bokser and Waldman,[6] the journal, like other forms of artistic and literary expression in the ghetto,

[2] Shoah, a Hebrew term meaning "catastrophe," is often preferred for its specificity in describing the genocide of the Jews by Nazi Germany and its collaborators during World War II, while Holocaust has broader international usage and can encompass other victim groups. For further nuance, see relevant historiographical discussions. Artistic monuments are multifaceted structures that serve as tangible representations of historical events, ideologies, and collective memories, often blending architecture and sculpture to convey significant cultural narratives. They are erected to honor individuals or events deemed important by a community, whether local or global, and can embody triumphant or catastrophic themes[3]. Bellentani and Panico[4] underline that monuments also play a crucial role in the articulation of national politics of memory and identity, often promoting selective historical narratives that align with the agendas of political elites. They further conclude that literary texts, understood in this expanded sense, are complex entities that encapsulate the interplay of material, symbolic, and political dimensions, contributing to the ongoing dialogue between past and present.

[3] Muselmann was a term used by concentration camp inmates to describe prisoners in an advanced state of physical debilitation and emaciation, often on the brink of death. The expression's origin remains debated, but it is generally interpreted as camp slang reflecting extreme exhaustion and hopelessness. The term is italicized in this article and defined at first use.

[4] *Ghettowachmann* (German: "ghetto guard") refers to an armed guard in Jewish ghettos, typically operating under *Schutzstaffel* (German for "protection squadron") command or in collaboration with German police forces. The term is italicized at first use and retains its original German spelling to preserve historical specificity.

bore witness to the resilience and creativity of Jewish prisoners, who used these outlets both to document their experiences and to preserve cultural memory. Peschel and Sikes[7] emphasize that *Vedem* was specifically a creation of the youth, providing them with a space to express their thoughts, hopes, and critiques of their circumstances. Peschel[5] further underlines that such cultural production was not only an act of resistance but also a mechanism of psychological survival, allowing individuals to construct coherent narratives of their experiences and to sustain ties with their community and the world beyond the ghetto walls.

The creation of *Vedem* thus played a crucial role in preserving cultural identity among the prisoners by offering a platform for intellectual and artistic expression amidst oppressive conditions. This journal was part of a broader spectrum of cultural resistance in Terezín—through theatre, music, and literature—that allowed inmates to maintain continuity of identity and community.[8] Rosentzveig[9] stresses that *Vedem* functioned as a cultural magazine, sustaining national and cultural identity by documenting experiences, reflections, and creative works. This corresponds to the general role of cultural magazines in preserving collective identity, even in periods of persecution and suppression. Blokhin *et al.*[10] add that *Vedem* should be understood not merely as a record but as a vital cultural medium that fostered resilience and cultural continuity under dehumanizing conditions.

The creative texts published in *Vedem*—produced by adolescents confined in Terezín—serve as profound reflections of cultural identity, encapsulating resilience, heritage, and the socio-political context of imprisonment. As a clandestine publication, it allowed young inmates to assert their cultural presence and resist dehumanization. This function corresponds to wider understandings of cultural expression in confinement, for example, the artistic activities of Italian prisoners of war in the United States during World War II, which mediated personal and community identity.[11] Similarly, Cheliotis[12] highlights how the arts in prison settings provided platforms for resistance and empowerment, enabling individuals to articulate cultural narratives despite oppression. Tello[13] notes that *Vedem* offered both a semblance of normalcy and a form of resistance against cultural erasure, akin to the role of objects and memories in concentration camps as frameworks of social memory. Einat and Einat[14] suggest that the creative texts in the journal may also be seen as a form of subcultural communication, comparable to inmate argot in Israeli prisons, which expresses the values and norms of a prison subculture.

The literary and artistic content of *Vedem* thus asserted prisoners' resilience and heritage by providing a medium for emotional expression, cultural preservation, and psychological resistance. Studies across diverse prison contexts confirm that artistic and literary practices offer crucial means of maintaining humanity and well-being, enabling inmates to sustain identity and dignity in dehumanizing circumstances.[15] In this sense, *Vedem* functioned as a cultural chronicle that documented lived experiences while preserving cultural identity and nurturing solidarity among prisoners.[16] Ducellier[17] situates this role in a broader historical pattern in which prisoners challenge subjugation and reconnect with lost freedoms through creative expression.

2.3. Qualitative content analysis of literary texts

This study examined texts from the underground magazine *Vedem*, produced by adolescent boys in the Terezín Ghetto between 1942 and 1944. These writings were approached not only as archival records—documents that reflect lived conditions, internal states, and cultural practices under coercion—but also as literary works shaped by expressive strategies.

2.3.1. Corpus transparency

The corpus comprises 95 digitized items from *Vedem*, accessed through the online repository of the Jewish Museum in Prague (https://www.holocaust.cz/vedem[18] stable repository IDs: VDM-ARCH-001–095). Texts were reviewed in their original Czech, with translations prepared by the author unless otherwise noted. Where possible, original diacritics and orthography were preserved, with only minor normalization for readability. The choice to work with digitized surrogates reflects both ethical and practical considerations in preserving fragile originals.[11,12]

2.3.2. Selection criteria

From this corpus, three texts were chosen for in-depth analysis: Zdeněk Ornest's *Just a Little* Warmth (*Trochu tepla*, *Vedem* no. 42[18]), Jiří Bruml's *Fate* (*Osud*, *Vedem* no. 15[18]), Anonymous, *Eyes* (*Oči*, *Vedem* no. 77[18]) The selection was guided by three factors: (i) thematic breadth—representing hunger/cold, status reversal, and moral recognition, (ii) variation in authorship—two named authors and one anonymous piece, and (iii) representative motifs—alignment with recurring themes in the broader *Vedem* corpus.[6,19]

2.3.3. Coding frame

A qualitative content analysis was employed[20-22] to identify thematic categories across the three selected texts. The coding was inductive, refined through iterative reading, and supported by lexical markers and narrative structures. The three main thematic codes were:

(i) Hunger/cold: lexically marked by terms such as "freezing," "hunger," and "warmth," evoking both physical deprivation and longing for relief. For instance, in Ornest's poem, the speaker confesses: "I envy you friends just a little warmth… I am consumed with a great hunger"
(ii) Status reversal: narrative structures depicting loss of property and emergent dependencies, often revealing moral ambiguity in survival strategies. In Bruml's prose, a moment of reprieve granted by a *Ghettowachmann* contrasts with the guard's remembered cruelty
(iii) Moral recognition: encounters involving recognition, forgiveness, or ethical turning points, often situated in caregiving contexts. In the anonymous "Eyes," the patient's "peace and forgiveness" functions as an ethical recognition scene akin to carceral literature.[15]

Each theme was anchored in textual evidence and contextualized through secondary sources,[23-25] allowing triangulation with historical records of ghetto conditions. Where appropriate, the literary techniques—metaphor, imagery, and shifts in narrative perspective— that shape how these experiences are conveyed are noted.

3. Results and discussion

The literary texts created by children and adolescents in the Terezín Ghetto can be regarded as original and credible archival materials. They provide not only a source for studying this historical phase, but also insight into the psychological states, moral transformations, and cultural expressions of those interned. In this section, three representative texts from *Vedem* are analyzed, showing how they function simultaneously as archival records of deprivation and as literary works that deploy imagery, narrative perspective, and symbolic language. All texts cited here are available in the digitized corpus of the Jewish Museum in Prague.

3.1. "Just a Little Warmth"

The poem "Just a Little Warmth" by Zdeněk Ornest condenses into verse the sensory and existential realities of hunger and cold in Terezín. The closing lines—".and I want to bury myself and sleep and sleep—" signal both the physiological lethargy of starvation and the metaphorical withdrawal from life.

> I envy you friends, just a little warmth,
> as I crawl out of bed almost freezing,
> when I can't feel anything else
> and in the fog of beautiful dreams, I'm completely cocooned.
> I don't even want to wash in the cold
> I'm slowly drowning, not in shame, in dirt.
> Oh, dear warmth, so dearly bought,
> How I'd like to warm myself on your lap.
> When I wake up from everything
> and find it hard to admit that I am consumed with a great hunger,
> all my hopes are sorely forgotten.
> ...and I want to bury myself and sleep and sleep.[5]

The poem is anchored in elemental imagery—warmth, hunger, and cold—which Hayes[23] identifies as part of the "elemental lexicon" of the Holocaust testimony. These images function both literally, as descriptions of bodily deprivation, and symbolically, as markers of inequality in the survival economy of the camp. The narrator's envy of "a little warmth" illustrates not only a longing for comfort but also recognition of unequal access to scarce resources.

From a literary perspective, Ornest uses repetition ("sleep and sleep") and antithesis (warmth/cold, hunger/satiation) to convey both the physical and psychological toll of deprivation. From a content-analytical perspective, the poem exemplifies the thematic code hunger/cold. It thus documents lived conditions, while at the same time preserving a cultural and emotional response to them.

3.2. "Fate"

Jiří Bruml's short story "Fate" juxtaposes the remembered world of pre-war privilege with the radically altered moral and material order of the ghetto. The protagonist, Mr. Kohn, a wealthy factory owner, becomes a starving inmate who steals potatoes, only to be caught by a *Ghettowachmann*. The guard's unexpected act of mercy—"You may go—" destabilizes the clear-cut categories of victim and perpetrator.

A massive shoe factory looms on the outskirts of a large Czech city. Every day, tens of thousands of products are exported all over the world, and all the profits go into the pockets of the multi-millionaire Mr. Kohn. One day, he was working in his office when there was a knock on the door. A young man entered at his prompting. Although he was dressed in his best clothes, he was poor. "What do you want?" said the millionaire. "Would you be so kind as to admit me to your workshops? I am..." "Nothing, I don't need anyone. Get out of here." "Please, at least your confidant." He couldn't say more because the factory worker pushed him out the door and slammed it behind him. About a quarter of an hour later, the phone on the factory table rang. Mr. Kohn grabbed the receiver. He listened for a moment and then answered: "Yes, with pleasure, there will certainly be a place for your nephew, Mr. Engineer.

[5] See http://vedem-terezin.cz/.[18]

You know what I wouldn't do for a good friend. Let him come to me. Yes... Goodbye." He hung up the receiver and sat down. It's been a long time. Bad times have come. Especially for the Jews. Jews lost their property and were sent to ghettos. That's what happened to Kohn, the factory owner. Lost in the whirlwind of the ghetto, he had to toil like everyone else. Neither money nor the friends he relied on helped him. Accustomed to sumptuous meals at home, he couldn't get enough of the Terezín food. For a long time, he suffered from hunger, until finally he did something that he, a millionaire, would never have dreamed of. One day, he returned from a walk with his pockets filled with potatoes. The hunt was successful, and the next day he set out again in search of his prey. He was standing by the pile of potatoes when a voice behind him said, "Slow down, sir, what are you doing here?" He jerked, turned round in alarm, and muttered something. Behind him was a young man in a *Ghettowachmann* uniform. "Oh, Mr. Factory Man, has a respectable millionaire and factory owner gone so far as to steal potatoes here? Do you know what you'll get or that? But I'll treat you differently than you treat me. You may go."[6]

Bruml's short prose narrative "Fate" juxtaposes the remembered world of pre-war Jewish affluence with the radically altered moral and material landscape of the ghetto. As Wünschmann[28] observes, the transition from pre-war marginalization to wartime incarceration brought about a complete reordering of social roles and survival strategies. In Bruml's story, the factory owner Mr. Kohn moves from a position of economic dominance to a state of acute dependence, where his survival hinges on the whim of a *Ghettowachmann*. The guard's terse words, "You may go," function simultaneously as reprieve and reminder of absolute subjugation.

Ștefan[29] underlines that the suffering in ghettos was intensified by toxic food, overcrowding, and inhumane conditions, all of which destabilized pre-war identities. Individuals once defined by wealth, education, or civic status found themselves surviving through barter, theft, or desperate appeals. Brenner[19] further notes that survivors' later testimonies reveal how pre-war cultural frameworks shaped not only their coping strategies but also the moral vocabulary through which these experiences were recounted.

From a literary perspective, "Fate" employs irony and reversal as structuring devices. The same Mr. Kohn who once dismissed the plea of a desperate jobseeker now pleads, silently, for food and leniency. The unexpected leniency of the guard complicates the rigid victim—perpetrator binary: the figure of authority who enforces deprivation is also capable, momentarily, of granting mercy. This reversal captures the instability of moral hierarchies in the ghetto, where power relations could shift unpredictably.

Narratively, Bruml's understated style—the absence of overt moral commentary, the use of plain reportage—forces the reader into a space of interpretive engagement. The text refrains from telling us how to judge Kohn or the guard; instead, it stages an encounter whose ethical ambiguity resists simplification. In doing so, it exemplifies the thematic code status reversal, a motif recurrent in *Vedem*, where previous hierarchies collapse and new, unstable ones emerge.

Viewed through the lens of content analysis, "Fate" functions not only as a document of deprivation but also as a literary record of the fractured moral economy of ghetto life. This aligns with findings that testimonies from Theresienstadt repeatedly highlight the precarious moral choices linked to food acquisition and survival.[26] Its narrative strategies preserve the psychological and ethical textures of survival, demonstrating that the writings in *Vedem* are archival material in a double sense, as they register external conditions and record the interpretive, value-laden negotiations of their young authors.

3.3. "Eyes"

The anonymous prose text "Eyes" presents a narrative of moral recognition and forgiveness.

A big city full of bustling life, large squares, mysterious streets, and wide avenues. It's said to be the most beautiful city in the world—Rio de Janeiro. I walked down one of the narrow and tucked-away streets of the suburbs—everywhere I looked, there were scruffy, ragged children, deprivation, and misery. From the squalid dwellings came the wailing and moaning of the sick. A true picture of the worst misery. Suddenly, a man came up to me, a man, a mere wreck of a man, with some rags hanging from him to replace his clothes—a beggar. He held out his hands and stammered something. Full of disgust and contempt, I pushed him away. He staggered and fell to the hard pavement. I walked on. It seemed so ridiculous and unnatural that such a scabby beggar should dare to address me, a distinguished official. The whole difference in our lives appeared before my eyes. He, a beggar, and I, a rich man by his standards. A few days later, a doctor came to us from the ministry with a recommendation from the government. He wished to see several hospitals and their facilities. I was to accompany him to the hospital, the place where people are born and where they die. We went in. The doctor had a look at the whole facility, and we were about to leave. Suddenly, my eyes fell on one of the beds. On it

[6] See http://vedem-terezin.cz/.[18]

lay the one, the unknown beggar, whom I had knocked into the mud and dust of the street a few days before. I stepped closer. Something flashed in his eyes like a ray of recognition, and he moved weakly several times. As the doctor, who was walking with us, told me afterwards, he died immediately afterwards, but there was so much peace and forgiveness in his eyes that I sank to my knees before this mangy beggar—I, a high official.[7]

The short prose text "Eyes" illustrates a profound shift in the narrator's axiological system—the hierarchy of personal and collective values—under the extreme conditions of war and imprisonment. Hauber *et al.*[23] show that World War II repeatedly disrupted value systems, as forced displacement, existential crises, and exposure to daily violence reshaped notions of morality, justice, and human worth. The narrative's central encounter, set in a hospital ward, stages a moment of unexpected recognition and forgiveness, crystallized in the description of "so much peace and forgiveness in his eyes." This brief but intense scene demonstrates how trauma can reorder priorities, foregrounding ethical connection over survivalist self-interest.

Kuwert *et al.*[30] highlight that the long-term psychological effects of wartime displacement often include diminished life satisfaction and resilience, particularly for children and adolescents. In "Eyes," the narrator's capacity to register and internalize an act of moral recognition amid deprivation suggests a reconstitution of values in real time, under duress. Shormanbayeva *et al.*[31] similarly argue that war forces a revaluation of societal norms, generating identity crises and new moral hierarchies—a dynamic that surfaces here in the oscillation between shame, empathy, and self-redefinition.

The hospital exchange also resonates with the weight of collective memory, which Bowie[32] identifies as central to how societies and individuals process wartime trauma. The imagined setting of Rio de Janeiro functions as a rhetorical displacement: it situates the encounter in an "elsewhere" that both cushions and intensifies the shame of the narrator's earlier indifference. Such rhetorical and transnational displacements recall other literary engagements with Holocaust memory, for example studies of Judeo-Rioplatense novels that intertwine Holocaust remembrance with the memory of political repression in Latin America.[27] This spatial relocation can be read as a coping strategy, a way of narrating moral failure and belated recognition from a safe symbolic distance.

From the perspective of thematic coding, "Eyes" exemplifies the category of moral recognition. This theme encompasses instances in which characters perceive or confer dignity in circumstances where systemic violence seeks to strip it away. The gaze described with "peace" and "forgiveness" becomes both a record of lived experience and a fragment of ethical life preserved under coercion. Such moments document the reconfiguration of values under extreme conditions and serve as archival traces of wartime moral economies, where recognition and reconciliation could coexist with deprivation and systemic cruelty.

By reading "Eyes" in this way, the article underscores its central claim that the *Vedem* texts are "living archival material," as they capture not only the historical circumstances of the Terezín Ghetto but also the psychological and ethical transformations brought about by war.

4. Conclusion

Our readings demonstrate how the children's texts in *Vedem* operate simultaneously as documentary, affective, and cultural records—indexing bodily deprivation, moral ambiguity within coerced economies, and moments of ethical recognition. The analysis highlighted the interconnection between these literary records and documented historiographical facts, underscoring their value as "living archival material," as they not only document lived conditions but also preserve the inner worlds and aesthetic strategies of their young authors. These writings thus offer a rare insight into the daily realities, emotional landscapes, and cultural practices of children and adolescents in the Terezín Ghetto, while also functioning as literary artifacts that resist reduction to mere historical evidence.

Nevertheless, the study has several limitations. First, the corpus was restricted to three selected texts which, although thematically diverse, cannot fully represent the breadth and stylistic range of *Vedem*'s production. Second, reliance on translated and digitized versions—while necessary for accessibility—may introduce subtle shifts in meaning due to editorial mediation. Third, the interpretive coding reflects the researcher's own analytical framework, which would benefit from comparison with alternative readings, including more explicitly literary or hermeneutical approaches.

Future research should address these limitations by expanding the corpus to encompass a wider range of *Vedem* texts and by cross-referencing literary motifs with contemporaneous material records such as ration lists, work assignments, and mortality data. Comparative studies with other ghetto publications could further illuminate both shared and divergent thematic and stylistic patterns.

[7] See http://vedem-terezin.cz/.[18]

Finally, interdisciplinary collaboration between historians, literary scholars, and archivists would not only refine the methodological approach but also enhance preservation strategies for these fragile yet invaluable cultural records.

Acknowledgments

None.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Exploring the use of artificial intelligence painting technology to restore the portraits of ancient poets

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Abstract

Present mainstream artificial intelligence painting models and platforms exhibit a fundamental difficulty in comprehending the defining characteristics of classical Chinese painting: The emphasis on capturing the spirit (*Xie Shen*) or evocative essence over literal depiction, as well as its characteristic flattened esthetic paradigm. This paper reviews the evolutionary trajectory of artificial intelligence painting technology and delineates its fundamental principles. By applying this technology to restore ancient poet portraits into three-dimensional lifelike representations, it provides technical pathways and parameter references for poet portrait restoration. This exploration charts novel application paths for artificial intelligence technology, enabling it to contribute more effectively to Chinese cultural studies. Furthermore, utilizing Stable Diffusion to restore ancient poet portraits bridges the psychological distance between historical poets and contemporary audiences, thus advancing the dissemination of ancient Chinese poetry culture.

Keywords: Artificial intelligence painting; Ancient poet; Chinese culture

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Citation: Song Y, Wu Z, Lan L, Sun W, Fan Y, Liu Z. Exploring the use of artificial intelligence painting technology to restore the portraits of ancient poets. *Arts & Communication*. 2026;4(1):025170026. doi: 10.36922/AC025170026

Received: April 22, 2025

1st revised: August 5, 2025

2nd revised: August 22, 2025

Accepted: August 25, 2025

Published online: September 18, 2025

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

The development of the internet presents both challenges and opportunities. While pervasive mainstream cultures are eroding traditional cultures, digital technologies and artificial intelligence (AI) offer novel pathways for the innovative development and creative inheritance of traditional culture. As an emerging yet contentious technology, AI painting plays a significant role in advancing the preservation of cultural heritage and its innovation.

The evolution of the internet and AI painting has catalyzed new approaches for cultural innovation and traditional cultural transmission. However, the integration of AI technology and culture still faces multifaceted challenges. This study examines the transmission and dissemination dilemmas, aiming to leverage AI painting technology to restore a comprehensive collection of ancient Chinese poet portraits. Utilizing three-dimensional (3D) poetic imagery, this study bridges the psychological distance between historical poets and contemporary audiences, thereby facilitating cultural inheritance and development.

Within this section, the evolutionary trajectory of the internet and AI painting, as well as the opportunities and challenges brought by AI painting technology in China, will be clearly delineated. All in all, social life is constantly adapting to technological progress, and the inheritance and dissemination of traditional culture and cultural undertakings necessitate adaptation to the internet medium.

1.1. The advent of the internet era

The rapid development of the internet has paved the way for the advancement of AI technology. The widespread adoption of internet technology has fundamentally transformed communication paradigms in the digital age, creating systemic impacts across socioeconomic domains. As documented in the 45th Statistical Report on China's Internet Development (March 2020), China's internet user base reached 904 million, reflecting an annual growth rate of 4.9% since 2018. Notably, mobile internet users accounted for 99.2% of this total (897 million), representing a 0.7% increase in the penetration rate during the same period.

The ubiquitous integration of smart devices into daily life has established digital platforms as the predominant medium for knowledge dissemination. The pervasive advancement of mobile internet ecosystems, coupled with the multifunctional capacities of smartphone technologies and optimized utilization of interstitial time segments, has precipitated an unprecedented level of technological dependency in contemporary society.[1] While propelling the continuous advancement and iterative innovation of internet technologies, these developments have created unprecedented pathways for disseminating China's traditional cultural heritage, simultaneously catalyzing tripartite innovation in cultural transmission through enhanced digital formats, redefined content frameworks, and optimized dissemination methodologies.

1.2. Development of artificial intelligence painting

In recent years, the development of AI painting technology has brought both opportunities and challenges to cultural heritage and the art industry. This section will examine the present application challenges and prospects of AI painting technology by reviewing its development trajectory.

As early as 1943, American neuroscientist Warren McCulloch and logician Walter Pitts proposed the mathematical model of neurons, which became one of the cornerstones of the modern AI discipline. Since the 1956 Dartmouth Conference formally launched AI research, a global proliferation of AI advancements has permeated every aspect of human life.

In literature, the 1962 debut of "Auto-beatnik" poetry software by California-based researchers, Wosy *et al.*, marked a milestone with the production of machine-generated poems, such as "Rose" and "Child," for magazine publication.[2] Cinematic history was rewritten in 2001 when Columbia Pictures' *Final Fantasy* became the first fully digital film, with 85% of visuals created through computer-generated imagery rather than traditional filming.

From 2011 to today, the growth of big data, cloud computing, the internet, the internet of things, and similar technologies has helped AI bridge the gap between science and real-world applications. In 2015, Google made its TensorFlow framework publicly available. This system, built on data flow programming, became a key tool for implementing various machine learning algorithms. That same year, intelligent image recognition emerged as a major AI field, paving the way for AI painting technology. It is worth noting that the real pioneer of AI painting was Cohen,[3] an art professor at UC San Diego. He created the Aaron software in 1972, which could produce still-life and portrait paintings with unique artistic styles.

The diffusion model (DM) framework, introduced in 2016, has garnered significant academic interest through its innovative stochastic denoising mechanism. This paradigm progressively synthesizes stochastically perturbed images by learning latent feature representations through iterative noise injection, ultimately generating Gaussian-distributed outputs that effectively mitigate mode collapse and gradient instability prevalent in conventional generative adversarial networks.

Subsequent advancements in AI-generated art systems, particularly Midjourney and Stable Diffusion, have catalyzed sociocultural transformations across industries. Engineers use AI painting to generate bridge rendering, outperforming the original rendering production method, which had long cycles and high costs.

In the context of media convergence, AI painting technology plays a crucial role in optimizing multimodal news production workflows and advancing the integration of traditional media into converged media ecosystems. In the Yellow Crane Poetry Virtual Reality Experience System at Huazhong University of Science and Technology, AI painting technology fulfills three core functions: Generating original visual representations of poetic scenarios, reconstructing contextual environments described in classical verses, and artistically rendering poetic atmospheres. This integration creates an omnidirectional immersive experience transitioning from concrete spatial constructs to macro-contextual backgrounds.

However, AI painting has also sparked controversies and debates across various dimensions, including legal, ethical, professional, and artistic. In the internet era, leveraging AI

painting technology to promote cultural inheritance and dissemination appropriately has become crucial.

1.3. The present status of the integration of artificial intelligence technology in Chinese culture

In recent years, numerous innovative endeavors have emerged to integrate China's traditional cultural heritage with modern media platforms. Chinese Poetry Competition employs a studio-based competition format to reinvigorate classical Chinese poetry culture, thereby engaging nationwide audiences in appreciating poetic esthetics. The documentary film *Like Drops of Water Reflecting the Moon* chronicles the life and poetic oeuvre of Ye Jiaying, utilizing the film's narrative framework to exemplify the esthetic essence of Chinese poetry.

Recent advancements in AI and digital technologies, particularly virtual reality (VR) and AI applications, have pioneered novel approaches to innovatively transmit classical Chinese poetry. For instance, the 6th season of the Chinese Poetry Competition pioneered the integration of AI-powered VR with naked-eye 3D studio technology. By establishing real-time 3D visualization zones during recordings, the program delivered immersive experiences to audiences and participants, demonstrating how emerging technologies can inform the preservation of poetic cultural heritage.

Nevertheless, the transmission of classical Chinese poetry culture continues to confront systemic challenges, including outmoded dissemination methodologies and a deficit in immersive experiences of poetic-pictorial synesthesia.[4] These challenges are primarily manifested in appreciating poetry and experiencing its allure, both of which require savoring the contextual imagery embedded within verses. However, conventional poetry dissemination predominantly focuses on literal interpretations, lacking immersive visual and esthetic engagement. This experiential deficit obscures the full charm of classical poetry, thereby diminishing public interest in its study.

In addition, present explorations in poetic innovation predominantly emphasize textual digitization while neglecting the reconstruction and embodiment of poets' personas. Poets are increasingly reduced to symbolic abstractions within cultural transmission, becoming visible yet unapproachable entities. The predominance of mainstream AI painting software and models is largely held by Western developed nations, with China yet to develop an AI painting software comparable to Stable Diffusion. Both AI painting models and software exhibit strong cultural biases, rendering them ill-equipped to comprehend Chinese cultural contexts and scenarios. Consequently, this poses significant challenges to integrating AI technology for Chinese culture.

As an application of AI technology in the field of painting, AI painting technology can be employed to restore and reconstruct the appearances of ancient poets, transforming portraits of poets into lifelike representations. This approach bridges the psychological distance between poets and contemporary audiences, thereby enhancing interest in poetry studies. This paper provides technical pathways and parameter references for restoring portraits of ancient poets, enabling the present AI painting technology to contribute more effectively to Chinese cultural studies. Simultaneously, this study provides corresponding recommendations for integrating AI painting technology into Chinese culture.

2. Literature review

This study constitutes interdisciplinary and cross-domain research. Consequently, the relevant literature requires reference spans multiple fields and orientations. To enhance the readability of this paper and strengthen the systematicity of the study, the literature review is organized into the following thematic sections: Literature on AI applications, literature on AI painting technology applications, literature on the cultural inheritance of classical poetry, and literature on the symbolization of poet imagery.

2.1. Literature on the application of artificial intelligence

At present, AI applications span multiple domains, including education, healthcare, transportation, arts, communication, culture, finance, and agriculture, encompassing various facets of societal life, with particularly notable applications observed in the arts, cultural industries, education, and cultural heritage preservation.

First, it is essential to explore the application of AI in the art domain. Tao[5] explores the application of AI in the artistic domain by employing esthetic theory as the foundational methodology. Focusing on AI-generated visual art—particularly painting—as a case study, the research combines the latest advancements in AI design to analyze the creative mechanisms, intentionality, esthetic agency, and evaluation frameworks of AI art. The study concludes by proposing two potential developmental trajectories: Either continuing to emulate human artistic styles in both content and the spiritual essence of form, or exploring innovative approaches to redefine computational esthetic principles through technological evolution.

In addition, the application of AI technology in the cultural industry has been extensively discussed. In exploring the cultural applications of AI, immersive

experience has emerged as a prominent research domain. Hua and Chen[6] investigate this phenomenon as a novel cultural industry paradigm. Their analysis adopts a dual framework examining both innovative integration mechanisms between cultural production and emerging technologies (AI/VR/augmented reality), as well as the operational characteristics of this sector through four critical dimensions: Developmental patterns, technological foundations, creative content production, and cross-domain innovation mechanisms. Furthermore, from the perspective of global cultural soft power competition, the study draws comparative insights from international best practices to propose four context-specific strategic recommendations for accelerating China's immersive experience industry development.

The role of AI technology in optimizing educational approaches should not be underestimated. Xi[7] employs a rigorous literature analysis methodology to systematically investigate the application of AI in educational contexts. The study first delineates the conceptual dimensions of AI-driven educational technologies through critical theoretical examination. Subsequently, it conducts a technical taxonomy by dissecting core AI technologies into their constituent elements and architectural frameworks. The research further examines paradigmatic application cases, including but not limited to: Automated grading systems with real-time feedback mechanisms; computer vision algorithms for educational content recognition and analytical processing; natural language processing interfaces enabling intelligent question and answer capabilities; adaptive instructional models supporting personalized teaching-learning interactions; and intelligent learning analytics platforms for behavioral pattern tracking. These case studies are methodically analyzed in terms of their operational scenarios and functional implementations within an authentic educational ecosystem. In addition, Hou and Xiao[8] explored the feasibility and effectiveness of AI painting technology in optimizing pre-school education.

Finally, present research on AI applications in cultural heritage preservation predominantly focuses on two dimensions: Macro-level discourse regarding AI's functional role in cultural continuity, and its domain-specific implementations in various fields, such as traditional Chinese medicine and the conservation of intangible cultural heritage (ICH).

A representative study by Huang and Yu[9] elucidates multimodal AI-driven approaches for ICH transmission. This includes leveraging internet and internet of things infrastructures to expand dissemination stakeholders, deploying multifunctional intelligent technologies to enhance spatiotemporal dissemination capabilities, employing algorithmic systems with deep learning architectures to optimize transmission efficacy, and implementing granular digitization alongside VR interfaces to activate multisensory engagement—collectively constituting a systematic framework for revitalizing heritage practices through technological mediation.

Song and Liu[10] propose a conceptual framework for the digital safeguarding and intergenerational transmission of ICH. The study systematically explores the feasibility of leveraging digital interaction design technologies to facilitate the effective transformation of ICH resources. However, the research exhibits limited engagement with AI applications in the cultural inheritance and innovative reinterpretation of classical Chinese poetry, particularly in terms of semantic analysis of ancient texts, AI-assisted poetic creation, and multimodal dissemination mechanisms.

Tang[11] implemented refined model training on painting models through AI technology, enabling AI painting models to learn the regional styles and techniques of Chinese Tianjin painting. The study employed methods, such as a questionnaire survey, to test the effectiveness of the model's application and public acceptance, thereby providing a reference for the similarity investigation in this research.

2.2. Literature on the application of artificial intelligence in painting

Present domestic research on AI painting technology applications primarily focuses on architectural visualization, artistic design (encompassing fashion, cultural innovation, as well as film and television sectors), medical imaging, new media content creation, the entertainment industry, and literary domains, such as classical Chinese poetry hermeneutics and stylistic regeneration.

Yang[12] demonstrated a technical workflow where preliminary bridge visualizations generated through Stable Diffusion undergo iterative refinement through realistic model processing and structural optimization using ControlNet plugins. This methodology enables precise compliance with pre-determined engineering parameters, achieving pixel-level control over generative outputs. The empirical validation confirms that integrating cutting-edge AI systems with civil engineering expertise can establish an efficient bridge rendering production pipeline, thereby unlocking novel possibilities for infrastructure design innovation through human-AI collaborative frameworks.

In addition, Liu[13] conducts a tripartite analysis through user-centric operational dynamics, rapid iteration cycles of AI models, and generative output efficacy to delineate

the characteristic features and application scenarios of AI painting technology. The study systematically synthesizes the professional ecosystem disruptions and ethical implications arising from this technological paradigm, culminating in forward-looking propositions regarding advancements in algorithmic architectures and model optimization techniques. Yang[14] investigated the technology's transformative potential within the new media sector. Across examining its role in innovating news product formats, restructuring production workflows, catalyzing educational system reforms, enhancing digital political communication, and fortifying next-generation mainstream media institutions, the analysis underscores concomitant ethical dilemmas while proposing multistakeholder governance frameworks to ensure sustainable technological deployment. Another study examines online users in the cultural and creative consumption sector as its research subjects. It explores critical factors influencing users' behavioral intentions toward AI-generated painting content, revealing that the behavioral intentions of consumer-end online users are primarily affected by the response efficacy of individual cognition.[15]

In summary, contemporary research on AI painting technology applications predominantly focuses on deconstructing technical mechanisms, evaluating practical advantages and sociocultural implications, and identifying inherent constraints. These studies methodologically investigate the technological feasibility and developmental trajectories within established application domains. However, scholarly attention remains conspicuously absent regarding critical investigation of AI painting's potential in pedagogical contexts, particularly its capacity to innovate cultural transmission paradigms through algorithmic innovation in disseminating classical Chinese poetry heritage.

2.3. Literature on the cultural inheritance of ancient Chinese poetry

Present research on disseminating classical Chinese poetry culture predominantly employs multimodal approaches encompassing cinematic programming, gaming interfaces, VR technologies, computer vision, and digital architecture systems. Implementation strategies frequently prioritize poetic content reconstitution through scenographic environment simulation and artistic conception construction.

This operational paradigm emphasizes maximizing the fidelity of reconstructing textually described settings and esthetic atmospheres to enhance hermeneutic processes, thereby achieving the objectives of cultural transmission. Nevertheless, extant methodological frameworks and empirical findings provide critical referential value for this research initiative. Cai *et al.*[4] critically addresses two challenges in cultural transmission: Antiquated dissemination methodologies and deficiencies in immersive conception experience. The proposed solution involves architecting VR ecosystems to develop hyper-realistic environmental simulations that facilitate profound cognitive engagement, thereby transforming abstract poetic imagery into embodied multisensory immersion through real-time haptic feedback and 360° spatial audio rendering.

2.4. Literature on the symbolization of poetic figures

At present, research on the symbolic studies of poet imagery is limited and primarily concentrated on renowned poets. Gong[16] elucidates how Lu You's poetic corpus, imbued with a patriotic ethos, underwent state-sanctioned canonization as a nationalist icon since the post-Southern Dynasties era. This historical process transformed the poet into a symbolic receptacle for successive generations' projection of socio-political aspirations. Such codification compromises the scholarly articulation of Lu You's multidimensional, anthropomorphized literary persona. In summary, scholarly investigation into the symbolization of poetic personas remains limited.

However, as extrapolated from Gong's seminal analysis, the symbolic reduction of poets' identities constitutes a pervasive phenomenon within literary historiography. The persistent emphasis and foregrounding of poets' virtuous attributes through such semiotic constructs engender cognitive estrangement and cultural alienation among general audiences during their engagement with poetic legacies, thereby impeding authentic historical comprehension of literary figures as multidimensional social actors.

3. Poets' portraits screening

Screening of poet portraits enables effective technical workflows and credible outcomes. Numerous scattered individual portraits and portrait collections of poets from China's Song Dynasty have been transmitted to the present day, with significant variations in the depicted appearances of the poets. Therefore, defining clear screening pathways and delineating the scope for these poet portraits is of critical importance.

This research project curated portrait paintings from classical Chinese art compendia, online-to-offline public art resource platforms, and the Palace Museum's digital repository. Primary reference materials include *An Illustrated Compendium of Chinese Historical Figures*

Vol.2 (compiled by the Conservation Department of the National Museum of Chinese History) and *Half-Portraits of Ancient Sages Through the Ages*. The former showcases authenticated portraits of eminent historical figures preserved in the National Museum's collection, except for Lin Zexu's portrait, comprising predominantly Yuan (1271–1368), Ming (1368–1644), and Qing (1644–1912) dynasty original ink-on-silk masterworks, supplemented by pre-modern woodblock prints, stone rubbings, and sculptural reliefs. Three selection criteria were prioritized:

(i) Frontally oriented portraits with unobstructed facial physiognomy;
(ii) Verifiable provenance documentation;
(iii) Portraits painted in the Northern Song Dynasty and later.

4. Research methods

4.1. The screening of artificial intelligence painting software

Different AI painting software tools apply to distinct scenarios and contexts. The selection of AI painting software significantly impacts the efficiency and quality of generated images. Across investigation and practical experimentation, this study has selected Stable Diffusion for the restoration of ancient poet portraits. The rationale for choosing Stable Diffusion is primarily due to its superior operational speed, reliable safety mechanisms, and advanced generative models.

In terms of operational speed, under identical hardware configurations, Stable Diffusion demonstrates relative operational efficiency advantages compared to other AI models, primarily manifested in: Simpler required parameter settings; optimized image rendering effects specifically for landscape photography and portrait close-ups; incorporation of diverse artist style keywords within the model library, with enhanced display quality for recognized celebrity facial templates.

In addition, the model integrates a Not Safe For Work safety filter that automatically converts generated images to solid black when the AI system detects inappropriate content.[17] Li and Xu[18] conduct a thorough analysis of AI applications in garment design, pioneering novel pathways for AI within the garment design domain. In addition, Yao and Wei[19] investigated the technical pathway for generating interior design renderings using Stable Diffusion, integrating the ControlNet plugin to achieve precise control over the rendering effects. Their research process is relatively comprehensive, encompassing a complete workflow of sketch input, information input, intelligent generation, and manual refinement, thereby providing a reference for the technical route design of this study. The aforementioned applications and practices offer valuable insights and enhance the feasibility of this research.

Finally, Stable Diffusion is a model based on the Latent Diffusion Model. The architecture comprises three core components: A Vector Quantized Variational Autoencoder, a DM, and a conditioning mechanism. The initial image undergoes iterative denoising cycles within the latent space of a U-shaped convolutional neural network (U-Net). Users can input prompt texts to intervene and guide the process of generating desired images. This procedure requires the contrastive language–image pre-training tokenizer to parse and arrange lexical relationships from user-input texts, converting them into token embeddings that can be injected into the latent space. This enables the latent space to correctly comprehend phrase relationships, thereby ensuring effective intervention in the denoising and image generation process.[20]

When these embedded numerical values enter the latent space, the prompt information is continuously consumed during each iterative denoising step to achieve conditional constraint-guided noise reduction. Once the set number of iterative steps is completed, the latent space data are converted back to pixel space information through the variational autoencoder (VAE), ultimately generating images that meet the specified conditions. In summary, images are first compressed into a low-dimensional latent space through VAE, cooperating with the conditioning controller's DM to generate new variables, and then use VAE to convert these variables back into images.

4.2. Selection of function and model

This research primarily utilizes three core functionalities of Stable Diffusion: The image-to-image generation mode, iterative denoising steps, and the ControlNet conditioning plugin.

4.2.1. The image-to-image generation mode

The image-to-image generation mode primarily focuses on two parameters: The guidance scale and denoising strength. The guidance scale determines the correlation between generated image content and textual prompts, where higher values (6–15 in this study) increase prompt influence. Denoising strength reflects the degree of image transformation relative to the source input, configured as a user-defined parameter between 0 and 1. Lower denoising values (<0.5) enable facial refinement with preserved likeness; mid-range values (0.5–0.7) induce substantial alterations in facial features, attire, and overall composition; values exceeding 0.7 result in complete visual reinterpretation. Therefore, the denoising strength range

adopted in this research is maintained between 0.1 and 0.4 to balance fidelity and creative variation.

4.2.2. Iterative denoising steps

Sampling steps refer to the number of iterations Stable Diffusion employs to generate images from input text prompts. Each incremental step provides the AI system with additional computational cycles to cross-validate semantic alignment between textual prompts and evolving latent representations, thereby enabling progressive refinement. This research utilizes step counts typically ranging from 20 to 40 iterations. Suboptimal step counts below this threshold risk incomplete denoising convergence resulting in compromised image integrity. In contrast, higher step counts (>50) enhance textural granularity at exponentially increasing computational costs, with excessive steps (>80) potentially inducing generative adversarial artifacts through over-optimization of latent space trajectories.

4.2.3. The ControlNet conditioning plugin

Control Net is a plugin based on the Stable Diffusion framework that utilizes edge features, depth features, or human pose skeletal features from input images to precisely guide Stable Diffusion in image generation. It introduces new control mechanisms into the image generation process, enabling more stable control over visual compositions and effectively solving the challenge of uncontrollable details in text-to-image generation. The Control Net system incorporates multiple pre-processors; each specialized for efficiently extracting different image features, which are then used to control the image generation process.

The most commonly used Canny pre-processor extracts precise image edges based on set threshold values. The Depth pre-processor converts images into depth maps and can process authentic depth maps from rendering engines. The OpenPose pre-processor generates skeletal pose maps to fix human poses in images, enabling the generation of different characters with identical poses. The Line art pre-processor produces either coarse or refined line drawings from images, and its corresponding model can receive hand-drawn line sketches as input.[21] ControlNet demonstrates robust functionality by requiring an input image containing specific informational cues as guidance, enabling it to perform operations, including but not limited to composition stabilization, pose definition, and contour delineation.

4.3. Technical roadmap

The complete technical workflow of this study comprises four steps: Initial generation, detail refinement, detail preservation, and final compilation. Initial generation involves adjusting relevant parameters in Stable Diffusion to restore portraits and generate preliminary results; detail refinement entails utilizing various ControlNet plugins to refine subtle facial features and expressions in the portraits; detail preservation employs corresponding plugins to enhance details and improve image clarity. The subsequent sections elaborate on these four steps.

4.3.1. Initial generation

Utilizing the image-to-image mode of Stable Diffusion to restore the portraits of poets. The image-to-image technology can be effectively applied to the modern restoration of ancient poets, preserving the character features of the original paintings. The selection of realistic human models can alter the stylistic presentation of the images, and the input of keywords ensures that the images do not deviate excessively from the original artwork.

4.3.2. Detail refinement

Utilizing the OpenPose plugin in the ControlNet extension can accurately identify limb movements, facial contours, and other information in images, precisely preserving the facial details of characters to enhance the resemblance of generated images to the poets. The Lineart plugin can extract linear features from the artwork, retaining facial details, natural expressions, and facial features of the original painting. The Depth plugin assists the U-net in understanding spatial relationships within the image by calculating its depth, preventing spatial depth errors in generated images while partially preserving the original contour outlines. By comprehensively utilizing these three plugins, the restoration accuracy of poet portraits can be significantly improved. Photoshop can be used to fine-tune imperfections and illogical elements in generated images.

4.3.3. Detail preservation

The After Detailer plugin can effectively address facial distortion issues. Tiled Diffusion is employed for latent space tiling with single batch processing. The tile count varies depending on the image dimensions and the video random access memory capacity of the computer's graphics card. In this study, the latent space tile height and width are set to half of the image dimensions. By enabling noise inversion with inversion steps set around 25, checking the "Enable Tiled VAE" option to maintain parameter consistency, and adjusting the redraw strength to between 0.6 and 0.75, the detail density of the output can be significantly enriched.

4.3.4. Filtering of generated results

To evaluate the similarity of the restored outputs, we use each poet's portrait to generate five images of the poet with varying similarity levels by configuring different

parameters, then assign numerical identifiers and archive them. Utilizing the Credamo survey software, questionnaires are distributed to participants, requiring them to select the 3D realistic human images exhibiting the highest similarity to the original paintings. Finally, the filtered images are aggregated and compiled into an image database.

5. Research process and results

This study sets the sampling steps to 30 and primarily employs three realistic large models: majicMIXrealistic (v6, Merjic), MoyouArtificial (v1060, Moyou, China), and realistic vision. Different combinations of these realistic large models with varied denoising strength and ControlNet plugins will produce distinct generative effects.

5.1. Denoising strength and model bias

The adjustment of denoising strength: This study sets the denoising strength between 0.2 and 0.4. By modulating denoising strength parameters and utilizing the ControlNet plugin, five distinct images are generated for each poet. The denoising strength is incremented in steps of 0.02 or 0.05 to ensure perceptible variations between iterations. Empirical findings demonstrate that under identical ControlNet configurations using the majicMIXrealistic large model with denoising strength exceeding 0.4, the generated portraits of different poets exhibit similar facial features (Figures 1-3). Comparative analysis reveals that higher denoising strength values correlate with homogenized nasal, ocular, and labial characteristics in reconstructed poet images, predominantly reflecting the model's learned East Asian facial archetypes while obscuring original facial distinctions, resulting in suboptimal restoration outcomes.

Under identical realistic large model conditions (majicMIXrealistic), when the source image exhibits low resolution with indistinct facial features, setting the denoising strength above 0.4 results in generated images displaying Caucasian facial characteristics, as demonstrated in Figures 4 and 5. The source image of Zhang Sanfeng suffers from an ambiguous definition, compounded by low tonal contrast between the figure and background, with minimal chromatic differentiation between facial features and skin tone. These conditions cause the generated image to exhibit elongated and enlarged nasal morphology in the reconstructed portrait, resembling Caucasian facial features.

Furthermore, even when the denoising strength is set within 0.2–0.4, similar phenomena persist. When employing the realistic vision large model on source images with ambiguous facial feature boundaries, setting the denoising strength as low as 0.27 still results in generated



Figure 1. Portrait of Zhao Pu. Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 3, 2024). Original image derived from the Qing Dynasty Palace collection. AI processing: Generated by the author using Stable Diffusion (model: majicMIXrealistic_v6; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.5) on March 22, 2024, followed by manual color correction.



Figure 2. Portrait of Zhou Dunyi. Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 7, 2024). Original image provenance: Collection of the National Palace Museum, Taipei. AI processing: Generated by the author using Stable Diffusion (model: majicMIXrealistic_v6; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.45) on March 22, 2024, followed by manual color correction.

images exhibiting Caucasian facial characteristics. As shown in Figures 6 and 7, despite the low denoising strength, the reconstructed portraits display light green irises (a trait associated with Caucasian phenotypes) and distinctly feminine facial features. In conclusion, under identical model conditions, higher denoising strength values combined with low-definition source images amplify the model's inherent biases, introducing



Figure 3. Portrait of Zhang Shi**.** Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 6, 2024). Original image provenance: Qing Dynasty Palace Collection. AI processing: Generated by the author using Stable Diffusion (model: majicMIXrealistic_v6; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.43) on March 20, 2024, followed by manual color correction.



Figure 4. Original portrait of Zhang Sanfeng. Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 5, 2024). Original image provenance: *Portraits and Cultural Relics of the Qiyang Lineage* (1937).

significant challenges to achieving historically accurate portrait reconstructions.

When the denoising strength is set to 0.2, the generated images retain the painting style characteristics of the source material but exhibit low textural dimensionality in clothing and skin rendering, resulting in suboptimal restoration quality. Therefore, configuring the denoising strength within the 0.2–0.4 range demonstrates both methodological rigor and empirical validity for this study.



Figure 5. Portrait of Zhang Sanfeng. AI processing: Generated by the author using Stable Diffusion (model: realistic vision; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.40) on March 20, 2024, followed by manual color correction.



Figure 6. Original portrait of Yuan Mei. Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 5, 2024). Original image provenance: *Portraits of Qing Dynasty Scholars* (1989).

In addition, it is critical to note that in most classical Chinese poet portraits—which prioritize expressionistic over realistic representation—subjects frequently exhibit slightly upturned eye corners. At lower denoising strength values (0.2–0.3), Stable Diffusion fails to reconstruct these subtle epicanthic morphological features. While further reducing denoising strength could theoretically preserve ocular characteristics, such adjustments would concurrently exacerbate loss of facial detail and incomplete stylistic transitions, ultimately compromising visual coherence.

5.2. Utilization of ControlNet plugins

The ControlNet plugins demonstrate operational flexibility, primarily through Depth, Line art, and



Figure 7. Portrait of Yuan Mei. AI processing: Generated by the author using Stable Diffusion (model: realistic vision; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.27) on March 20, 2024, followed by manual color correction.



Figure 8. Original portrait of Zhou Dunyi. Image source: 1-and-1 Learning Network. *Chinese Historical Figures Image Library*, URL: https://www.121xx.cn/cnmr/index (retrieval date: March 5, 2024). Original image provenance: Collection of the National Palace Museum, Taipei.

OpenPose functionalities. The OpenPose plugin enables the precise identification of body posture and facial contours, thereby preserving facial details to enhance the resemblance between generated images and historical poets. The Line art plugin extracts linear features from artworks to retain original facial details, natural expressions, and distinct facial attributes. The Depth plugin calculates spatial depth to support the U-net architecture in accurately interpreting spatial relationships, thereby mitigating depth-related inaccuracies in generated outputs. The application of these three plugins is dynamically adjusted based on empirical reconstruction outcomes, constituting a critical phase of detail refinement. The integrated deployment of all three ControlNet variants enables the systematic modulation of facial feature retention and granular detail preservation.

5.3. Similarity survey and conclusion

This study generated 210 poet images (42 poets in total, 5 images per poet) by modulating denoising strength parameters, ControlNet plugins, and large models. A total of 86 validated questionnaires were collected from participants across diverse genders, age groups, and domestic Chinese cities. Respondents selected the image with the highest similarity to the source image from each set of five generated images. Across statistical analysis of these data, key findings emerged: The majority of optimal images exhibited denoising strength values below 0.3 (concentrated within the 0.23–0.30 range), indicating enhanced facial detail preservation and heightened realism in generated portraits under these parameter conditions. As exemplified in Figures 8 and 9—the latter being a filtered portrait with a denoising strength of 0.25—these



Figure 9. Restored Zhou Dunyi Portrait. AI processing: Generated by the author using Stable Diffusion (model: majicMIXrealistic_v6; prompt: "an ancient Chinese poet, high-definition image quality, realism," redraw index 0.25) on March 21, 2024, followed by manual color correction.

settings yielded the maximum perceptual congruence between input and output images.

5.4. Results evaluation

5.4.1. Clarity assessment

The *Half-Portraits of Ancient Sages Through the Ages* comprehensively covers Song Dynasty poet portraits required for this research. These half-portraits exhibit clearly defined facial details, expressions, and contours, resulting in reconstructed images of Song Dynasty poets with superior facial clarity. Yuan Dynasty poet portraits, though fewer due to the abolition of the imperial examination system (which diminished literati status and elevated popular culture,

leading to the decline of literati culture), are also sourced from the same compendium and retain high-definition characteristics. Portraits of Ming and Qing Dynasty poets primarily derive from *An Illustrated Compendium of Chinese Historical Figures Vol.2*. However, as some entries in this compendium feature full-body portraits with minimal facial details and indistinct features, their reconstructed counterparts exhibit comparatively lower fidelity.

Beyond source image clarity, pixel resolution settings significantly impact generative outcomes: A 1:1 aspect ratio produces squarer facial contours, whereas a 1.5:1 ratio elongates facial features. Nevertheless, even with fixed aspect ratios and increased pixel resolution, low-definition source portraits still yield suboptimal reconstructions. Consequently, the image-to-image workflow demands exceptionally high standards for source portrait clarity and iconographic accuracy to achieve viable restoration results.

5.4.2. Instability assessment

In practical reconstruction workflows, several recurrent failure modes manifest: Stylistic incongruence, facial feature distortion, unintended Caucasian morphological prominence, and model bias amplification.

The first category, stylistic incongruence, primarily stems from suboptimal model selection; employing stable, realistic large models significantly mitigates such errors.

The second failure mode, facial feature distortion, arises from inaccuracies in facial feature interpretation and the use of low-definition source images. AI models fail to decode the nuanced ocular and expressive conventions characteristic of classical Chinese portraiture, resulting in generated images with anomalous ocular expressions (e.g., asymmetrical eye proportions, discordant gaze directions), which can only be rectified by reducing denoising strength.

The third failure mode involves unintended Caucasian morphological prominence. Even when utilizing Asian-biased 3D realistic models, generated images may exhibit distinct Caucasian traits (e.g., azure ocular pigmentation). This phenomenon predominantly occurs when source images lack definitive ocular features and correlates strongly with the Western-centric anthropometric priors embedded during model training, particularly given that most realistic models prioritize esthetically idealized large eyes as a facial archetype. Consequently, the sporadic emergence of Caucasian characteristics remains an irreducible artifact within present reconstruction paradigms.

6. Conclusion

Artificial intelligence-generated painting technology, a novel AI application in the contemporary era, exerts profound impacts on societal economics, political discourse, and cultural evolution. There is persistent skepticism surrounding AI-generated painting, particularly regarding unresolved legal ambiguities and ethical dilemmas inherent in its implementation. Therefore, establishing frameworks for the ethical deployment of AI-generated painting technology is imperative to harness its potential for advancing sociocultural progress.

In summary, present state-of-the-art AI painting software demonstrates significant difficulty in comprehending the portrayal of figures within the Chinese artistic tradition. Characterized by a flattened perspective and an emphasis on "capturing the spirit" (*Xie Shen*) rather than realism, classical Chinese painting presents substantial challenges in accurately recreating the likeness of historical poets. Predominant AI image generation models, aligning primarily with mainstream esthetic norms, exhibit deficiencies in their grasp of classical anatomical structures and the distinctive features inherent in traditional Chinese painting.

This study proposes specific technical parameters and implementation pathways tailored for the reconstruction of portraits depicting ancient Chinese poets. Furthermore, a digital museum platform was developed to exhibit these AI-reconstructed portraits. The work aims to provide novel methodologies for poet portrait reconstruction, utilizing the potential of 3D representations to bridge the psychological distance between historical figures and contemporary viewers, thereby facilitating the advancement and appreciation of classical Chinese poetry culture. The preservation and transmission of China's exceptional traditional culture remains a significant journey ahead.

The critical question of how emerging AI technologies can be effectively harnessed to empower the transmission of cultural heritage warrants sustained discussion. Throughout the extensive history of technological development, the advent of new technologies has consistently been accompanied by professional anxiety among practitioners, akin to the transition from the analog to the digital era, where technological innovation directly impacted industry evolution and the psychological states of creators. Unlike other emerging technologies that merely sparked discursive controversy, the resistance against AI painting technology has extended beyond rhetorical opposition, evolving into collective mobilization.[22]

Crucially, mainstream AI painting models and software currently lack the capacity to interpret the nuances of Chinese painting styles and poet iconography. Consequently, the development of AI art tools and

foundational models specifically adapted to the tenets and esthetics of Chinese culture is of paramount importance.

Acknowledgments

None.

Funding

None.

Conflict of interest

Yao Song is an Editorial Board Member of this journal, but was not in any way involved in the editorial and peer-review process conducted for this paper, directly or indirectly. Separately, other authors declared that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

No datasets were generated or analyzed during the present study.

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Magaluf Ghost Town: Alienation, realism, and magic through film in tourism hotspots

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(This article belongs to the *Special Issue: Shaping Destinations: The Role of Cultural Affinity and Screen Tourism in Sustainable Development*)

Abstract

The daily experiences of local populations in tourism hotspots are increasingly characterized by feelings of alienation, resulting in polarized and sometimes ambiguous attitudes toward the tourism industry within these communities. In that context, this article explores, using an ecocritical and new materialist lens, how *Magaluf Ghost Town* (Miguel Ángel Blanca, 2020) creates an alternative affective image of the Spanish town of Magaluf. Blanca's film, a hybrid of fiction and non-fiction, follows the lives of real individuals residing in this resort and offers an ironic critique of some consequences of mass tourism and gentrification. Through close reading and audiovisual analysis of selected sequences, the study concludes that this innovative and daring portrayal of Magaluf can reaffirm the local identity through its detailed depiction of various characters that depend on tourism. At the same time, the prestige associated with a more authorial rather than commercial perspective entails the possibility of shaping new mystifications that the tourism industry could incorporate to support a rebranding of Magaluf. The findings point to new grounds in the fertile intersection between film studies and tourism studies when approached from ecocritical perspectives.

Keywords: Magaluf; Mallorca; Tourism; Tourismphobia; Ecocriticism; New materialism

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Citation: Rodríguez L. *Magaluf Ghost Town*: Alienation, realism, and magic through film in tourism hotspots. *Arts & Communication*. 2026;4(1):025300070. doi: 10.36922/AC025300070

Received: July 24, 2025

1st revised: August 27, 2025

2nd revised: September 3, 2025

Accepted: September 4, 2025

Published online: September 18, 2025

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1. Introduction

Anti-tourism discourse has gained prominence in Spain in recent years, reaching new heights in 2024 with numerous demonstrations across various regions of the country.[1] The surge in visitor numbers, particularly following the COVID-19 pandemic, has been accompanied by negative consequences, including increased pressure on the real estate market and deterioration of social cohesion. These issues have been increasingly highlighted and condemned by residents, especially in a country that ranks among the world's leading tourism destinations. The primary centers of these protests have been two of the most popular cities on the Iberian Peninsula, Barcelona, and Málaga, as well as the two Spanish archipelagos, the Canary Islands and the Balearic Islands.

It is perhaps here, later, where the impacts of a sector currently experiencing a challenging phase in its relationship with the native Spanish populations are most perceptible and extreme. One example is Mallorca, the most visited of the Balearic Islands, frequently cited as a paradigmatic case of overtourism. In recent years, a substantial body of academic literature has examined this term, with several studies specifically addressing its manifestation in the context of the Balearic Islands.

The World Tourism Organization defines overtourism as the impact that tourism has on a destination, or parts of it, through its strong negative influence on the perceived quality of life of citizens and/or the quality of visitor experiences.[2] While the most commonly used indicator for assessing this negative impact is the excessive influx of tourists, a systematic review of the existing academic literature[3] highlights that the issue extends beyond mere visitor numbers. Tourist behavior also plays a crucial role, and overtourism should be understood as a multifaceted phenomenon shaped by economic, demographic, cultural, and environmental dimensions. These factors must be interpreted in light of residents' perceptions.

Moreover, several scholars have argued that overtourism is fundamentally a locally determined phenomenon, implying that its definition and measurement may vary according to specific contextual factors.[3] The precision of the term's definition is crucial, as there is a risk that excessive or indiscriminate use may lead to its trivialization.[4]

In the case of Mallorca, survey-based analyses have concluded that "overtourism can be defined as seasonal excess visitor numbers, with tourists spreading into places formerly reserved for local residents, contributing to overpopulation, a declining quality of life, and over-strained ecological resilience."[3(p.20)] Newspaper analysis has further revealed that this excess in sheer visitor volume is a prominent issue on the Balearic public agenda, particularly regarding its impact on the local population.[5] Even tourists themselves associate overtourism with processes of transformation and commodification (viz., touristification), which result in a diminished perception of authenticity.[6]

Over the past decade, several documentaries, such as Álex Dioscorides' *Overbooking*,[7] have highlighted the social and environmental unsustainability of the traditional tourist model in Mallorca, an issue that is increasingly influencing its public policies. The most apparent and seemingly feasible solution, which the sector appears to be moving toward, is to limit the number of visitors and shift focus toward more exclusive forms of tourism.

Miguel Ángel Blanca's film *Magaluf Ghost Town*,[8] a hybrid of documentary and fiction centered on Magaluf (one of Mallorca's most popular coastal resorts renowned for its vibrant nightlife and its reception of predominantly British visitors, many from the working classes), captures the underlying tensions between locals and tourists, as well as the ongoing processes of transformation driven by the interests of the real estate sector. Despite its unquestionable critical vision, the film also adheres to a renewed interest in defending, in unorthodox ways, the freedom and creativity present in certain types of vacations that are generally vilified. This has already been explored in other artistic and academic projects related to Magaluf[9] that consider its nightlife a struggle "between self-identity and a desire to be part of a mass,"[10(p.425)] and deserves close attention in other contexts (such as Benidorm) when analyzed from a class perspective.[11] Blanca's project was praised by critics for successfully combining radicalism with a popular and accessible tone[12] and has previously been analyzed from various academic perspectives, including its links with the macabre[13] and the relationship between tourists and the extraordinary/infra-ordinary.[14] The latter line of inquiry aligns with the trend in tourism studies to note the increasingly blurred boundaries of tourist activities, considering them as part of the broader spectrum of human mobilities.[15,16]

This article aims to demonstrate that the complex array of people, institutions, capital, social media, etc., represented in Blanca's film leads to a portrayal of the contradictory reality and carnivalesque character of Magaluf that resonates with the actor-network (ANT) theory as well as with the recent critical praise for an ecocinema. It will be argued that these theoretical perspectives share common points that can help to consider how alternative representations of tourist destinations may establish new emotional connections between these destinations and both locals and visitors.

Methodologically, this article employs a qualitative approach grounded in close textual and audiovisual analysis of Miguel Ángel Blanca's film *Magaluf Ghost Town*. Special attention is devoted to key sequences, including the construction of a scale model, representations of nightlife and social media use, the so-called "danger unit," and various spectral scenes, which are analyzed for their thematic and esthetic significance. This single-case study seeks to demonstrate how the film mobilizes material dimensions to reframe the cultural and spatial imaginary of Magaluf.

Section 2 outlines the theoretical framework, focusing on how ecocriticism and new materialism are increasingly informing both tourism and film studies. It introduces key conceptual tools that will be applied in the subsequent analysis. Section 3 engages with *Magaluf Ghost Town* in

detail, identifying sequences and narrative elements that are particularly resonant with the theoretical premises laid out earlier. Section 4 brings these discussions into dialogue, exploring the analytical insights that emerge from the intersection of theory and filmic text. Finally, the conclusion synthesizes the main findings and proposes future lines of inquiry.

2. Theoretical frame: Ecocriticism and new materialism in relation to tourism and media

As Donna Haraway states, cinema can serve to construct "new stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections."[17(p.160])] This idea largely underpins the foundation of ecocriticism applied to audiovisual media. The primary objective of this theoretical approach is not merely to problematize certain representations of the environment in mainstream audiovisual productions or to identify the most environmentally harmful practices within the film industry. Rather, it aspires to a more ambitious goal: to uncover new strategies that facilitate the articulation of alternative audiovisual representations, thereby expanding the mental frameworks through which audiences engage with environmental issues and relate to the natural world. Scholars such as MacDonald have emphasized the importance of experimental and avant-garde films to accomplish this.[18] In addition, the new proposals and discourses on the environment require a renewal of audiences' attitudes and emotional responses in relation to what is depicted on the screen.

The necessity for new narratives and a critical examination of our relationship with the environment has become increasingly apparent on a planet currently facing a climate crisis. Despite this, certain imaginaries rooted in extractivist, consumerist, and predatory paradigms persist and exert significant influence. For instance, within the realm of tourism, there exists a longstanding tradition of analyzing tourism imaginaries through an ecocritical lens. In recent years, this approach has been exemplified in scholarly works exploring the relationship between tourism and the Anthropocene.[19]

The question should not only focus on the characteristics of these tourism imaginaries but also on the alternatives being proposed to them. This is the approach taken by Rust, Monani, and Cubitt in their 2023 update of their seminal work on ecocinema.[20] In an ecocritical context, it is additionally essential to analyze not only the imaginaries and discourses but also the circumstances and material conditions under which these representations are produced, as the authors affirm:

> Cinema has become unthinkable apart from its dependence on mining, electricity generation, and fabrication with their attendant pollution, on global logistical operations and supply chains with massive ecological footprints, on material and technical infrastructures with direct consequences in the physical world, and on the problem of waste.[21(p.1)]

However, it is undeniable that the intricate infrastructure of the audiovisual industry also influences emotions. For this reason, ecocriticism advocates for the examination of the interconnectedness between human and non-human elements and agents in the pursuit of a comprehensive understanding of cinema:

> Ontologically, it is clear that such as human beings, media technologies, and screenings are only thinkable as permeable congregations of materials and energies suffused by flows and affects coursing through the wider world as cells and neurons, chips, and datastreams.[21(p.2)]

This approach to film studies shows notable parallels with contemporary trends in tourism studies, particularly the ANT. In a comprehensive literature review of developments in tourism studies during the 21st century, Cohen and Cohen[22] identified ANT, performativity, and the mobilities paradigm as the most significant theoretical frameworks currently shaping the field.

Building on the concept of performativity, tourism studies have long posited that there is no fundamental essence that renders a destination inherently interesting; rather, it is the repetition of specific actions that constructs the notion of "authenticity" surrounding a tourist attraction, since it is possible to talk about constructive and existential authenticity, besides the objective one.[23] In particular, the way tourists behave is an important reference in shaping tourist spaces, and this is why some of the most relevant authors in tourism studies have defended that places should be seen as dynamic, in constant movement.[24] More recently, ANT has highlighted the importance of identifying the agents involved in these performances and understanding that a complex network of phenomena is often woven between human and non-human actors. This perspective recognizes that not only tourists are engaged in creating a tourist hotspot, but also residents, institutions, and communities. In addition, non-human entities are involved too, such as machines—for example, the role played by social media algorithms—and ecosystems, including fauna and flora.

This development has resulted in a renewed emphasis on the significance of materiality, extending beyond purely discursive considerations.[25] In recent years, for example, several studies within the field of tourism have examined

the material cultures associated with this sector.[26] Examples include analyses of the role of sand,[27] the significance of the bucket and spade,[28] and the relationship between souvenirs and wildlife,[29] among others.

Consequently, the integration of a novel concept of materialism represents perhaps the most compelling point of convergence between the advancements in audiovisual ecocriticism and tourism studies, following a wider trend in cultural studies.[30] One of the most influential scholars associated with the paradigm of new materialism is Karen Barad, who has challenged the notion that performativity should be primarily understood through language and discourse. Instead, she proposes a conception that transcends the relationship between objects and their representations, emphasizing the practices and transformative processes through which entities are constituted (elements that only occasionally involve discursive aspects). To summarize:

> Matter refers to the materiality/materialization of phenomena (…). Matter and meaning are mutually articulated. Neither discursive practices nor material phenomena are ontologically or epistemologically prior. Neither can be explained in terms of the other. Neither has privileged status in determining the other.[31(p.207])

This approach can be easily related to the film that will focus our analysis: *Magaluf Ghost Town*. Applying ANT's new materialism makes it possible to trace the network of human and non-human actants in the film, from real estate investors to the digital platforms and ghostly presences. In addition, new materialism allows for interpreting a physical model as a performative object, emphasizing how matter and meaning co-constitute each other. Similarly, materialist ecocritical approaches inform the reading of camera work and rhythm, privileging vulnerability and relationality over spectacle.

3. Film analysis

Magaluf Ghost Town is an independent production by Boogaloo Films, Little Big Story, and Mosaic Producciones, shot in Mallorca by a small team right before the COVID-19 pandemic. As previously mentioned, it is not a conventional documentary but an experimental film that blurs the boundaries between fiction and non-fiction.

It is essential to consider the context in which the film was both shot and released. Filming took place in 2019, during the peak of Spain's tourism recovery following the 2008 financial crisis, while its release in 2021 coincided with a broader period of reflection on the future of tourism in the aftermath of the COVID-19 pandemic. This temporal framing is particularly relevant, as some scholars have argued that crises should not be seen merely as external disruptions to tourism, but rather as formative moments that shape the sector's trajectory.[32]

From this perspective, it has been suggested that public–private intervention offered a potential response to the issue of hotel obsolescence identified decades ago. This approach took form through public policies such as the Horizon 2020 Plan and the provision of subsidized loans aimed at revitalizing tourism infrastructure.[32] In the Balearic Islands, regulatory relaxation for tourism development was even more pronounced in the wake of the 2008 crisis. Concurrently, the municipality of Calvià, where Magaluf is located, initiated a rebranding process that has continued in recent years, culminating in the launch of the Calvià 365 tourism diversification project.[33]

Magaluf Ghost Town follows several characters, all of whom are locals, and presents life in Magaluf from their perspective. Several elements within the film can be related to the theoretical framework outlined above. The relationship between tourism and the Anthropocene is illustrated through a model; the conflicts associated with tourism and their impact on local societies are depicted through the main characters; and, finally, the role of non-human actors is explored—from digital entities such as apps and social networks, to the presence of ghosts.

3.1. The agency behind the Anthropocene: Magaluf through a scale model

The film begins with a scene of a machine cutting pieces with lasers. A man then glues, paints, and sprays, creating a model of Magaluf. Off-screen, children sing a song in a haunting whisper; by the end of the film, it is revealed that this spectral soundtrack was a summer hit from decades past, "Come to Magaluf," performed by the band Los Bríos.

This model symbolizes the concept of an environment in which human activity exerts a decisive influence. The detailed shots of the model serve as a leitmotif, recurring approximately every 10 min to mark different episodes within the film. In addition, the model is integrated into the diegesis: It is connected to Olga, the Russian real estate agent, who explains how international investors are speculating on land within the tourist area, aiming to replace working-class tourism with a more exclusive audience.

While other documentaries addressing tourism in Mallorca often utilize cartographic representations, *Magaluf Ghost Town* asserts its playful perspective from the outset by employing a model rather than a map. This choice underscores the film's emphasis on materiality and performativity, positioning the physicality of the environment at the core of its approach to the territory.

This model functions both as a tangible physical object and as a "discourse" about the city. While maps also embody these two aspects, the key difference lies in the model's more intuitive engagement with the concept of agency. The person who constructs the model, whom we see on screen, assisted by machines and tools, embodies a form of agency that parallels the forces shaping the terrain, such as erosive actions by wind and sea, as well as the influence of human agents (for example, foreign investors, like Olga's clients). This connection aligns the film with the broader idea of the Anthropocene. Furthermore, the visibility of the construction process of the model helps to mitigate the sense of objectivity and inevitability often conveyed by maps; it emphasizes the human intervention involved in shaping the environment, the notion of material agency.

To underscore the significance of the model, shots of it (sometimes detailed close-ups of specific elements such as coasts, swimming pools, or skyscrapers) are consistently juxtaposed with wide-angle shots of the corresponding real-world features. This editing choice emphasizes the correspondence between the model and its real-world counterparts. The ground-level shots are captured from the perspective of a concealed character, peering over a balcony, "peeking out and afraid of being discovered," as the director describes.[34] This vantage point contrasts sharply with the drone shots frequently used in other documentaries on tourism's effects, which seem to dominate the landscape, so the film's alternative decision reminds on Rust, Monani and Cubitt's idea that "the ecocritical lesson we should take from the recent history of technological development is to not just focus on what can now be included or enclosed by cinema but also on what has been further excluded and naturalized."[21(p.8)]

3.2. Characters and locals' strategies facing tourism

The film presents, through its characters, a nuanced discourse on the inequalities associated with tourism and its impact on the local communities. Among the protagonists is Olga, a Russian real estate agent who, as previously mentioned, offers her clients investment opportunities in land, luxury villas, and similar ventures. In one scene, she visits Emilio, a representative of Magaluf's small business owners. His restaurant/pub has been highly successful, yet it faces an uncertain future as a family enterprise due to his son Aarón's lack of interest in continuing the business. Aarón is frequently accompanied by another teenager, Rubén, who embodies the aspirations and ambivalence of the younger generation. While he dreams of leaving the island in search of a more glamorous life than that of serving tourists, he also fantasizes about adopting the lifestyle of a permanent tourist himself.

Emilio's establishment also employs Cheikne, a worker from Mali, who shares an apartment with Tere, a middle-aged waitress from Andalusia. Together, they represent Magaluf's working class. Unlike the younger characters, their aspirations are more pragmatic: rather than seeking glamour, they strive to earn a living and avoid loneliness, all while navigating the risks posed by intoxicated tourists.

The characters in the film help establish its tone and drive several of the strategies through which the discourse on overtourism is rendered less solemn and, arguably, more effective. Examples include Tere's use of humor and Rubén's openly queer perspective. This relates to affective ecocinema: it is noteworthy that both humor and queerness have been identified by some scholars as strategies aligned with a form of "bad environmentalism," one that deliberately avoids the solemnity and moralism often associated with traditional ecological discourses, thereby potentially increasing its effectiveness.[35]

Regarding the film's production practices, it is important to highlight that these characters portray themselves, operating within a performative documentary framework. The director has stated that casting was one of the most challenging aspects of the project.[34] Fictional elements are introduced only toward the end of the film. As Miguel Ángel Blanca explains, "the arc of the characters is closely linked to the very form of the documentary, which becomes rarified and filled with fiction."[34] This hybrid creative process, situated between documentary and fiction, resonates with new materialist conceptions of matter as something constituted through the relationships it forms and the processes in which it participates.

3.3. Non-human agents: Ghosts and the digital world

This analysis highlights the role of non-human mediators, with particular emphasis on the digital realm and the supernatural. Regarding the digital world, mobile applications are presented as mediating tools that structure and give meaning to the characters' experiences through performativity. The audience observes their use of social media and other apps. Tere manages a YouTube channel, Rubén showcases his Instagram profile, and Cheikne uses Google Maps to display his hometown. Several scenes depict the characters recording themselves and posing, followed by the presentation of these recordings within the respective app interfaces, illustrating both process and outcome, two sides of the same coin. These dynamic functions like a matryoshka doll: The characters perform for their social networks while simultaneously performing for the film itself.

A contrast emerges between the characters associated with the local workforce in Magaluf, who actively

engage with social media, and those aligned with capital investment, such as Olga, who rely more on traditional mass media characterized by a top-down communication model. A comprehensive analysis of media presence in the film must also be considered: radio (notably, through an ironic mention of a "balconing" contest, a dangerous and sometimes fatal practice in Mallorca involving jumping from balconies into swimming pools), television reporters conducting eccentric street interviews, and the TV set where Olga is interviewed.

The director offered a reflection on his reasons for incorporating social media and mass media into the film that resonates with ANT and performativity theories on tourism:

> We know the city through what we've seen in news broadcasts, which have helped construct a myth that may not be entirely real. That led us to consider shaping this legend by building a universe filled with new rituals and myths. At its core, Magaluf is a kind of film set where people create their own characters as an act of resistance to survive. That's why legends, memories, and dreams are so important in constructing this new image.[34]

In addition, several narrative threads in the film engage with the supernatural and the presence of ghosts. Tere's ongoing relationship with her deceased husband, Rubén, and his friends' fascination with creepypasta legends, and, notably, Rubén's personification of Magaluf itself as a ghost. Magaluf has no voice of its own; it is revealed only through Rubén's intuition. Yet, it emerges as a presence far more complex than any human character, an amalgamation of pleasure and cruelty, the human and the non-human.

The connection between phantasmagoria and tourism is particularly evident: Not only because Magaluf becomes a ghost town during the off-season, an aspect seemingly embedded in its very identity, but also due to the proximity to death that many visitors experience during their stay at the resort, often through drug use or high-risk behaviors such as "balconing."

In relation to the film's shooting practices, it is worth emphasizing the work of the so-called "danger unit," as credited in the film. This group of operators functioned as covert camera crews, capturing footage of tourists engaging in sexual activity in public places, entering the most chaotic areas of Punta Ballena's nightlife, and more. These scenes, some of the most documentary-like segments in the film, carry a notable degree of dark humor. For instance, the use of "The Waltz of the Flowers" by Pyotr Tchaikovsky (from The Nutcracker) accompanies nighttime footage of tourists having sex on the beach. Regarding the operation of this unit, the director remarked:

> We managed to remain flexible enough to seize opportunities as they arose, something only possible with a small team. (...) This created a fertile ground where creativity thrived, and everyone had the chance to contribute. For instance, the sex scene filmed on the beach was shot by the editor because I was doing fieldwork elsewhere at the time. The fact that an editor feels empowered to pick up the camera and know that what they shoot might end up in the final film is something truly beautiful. It breaks away from the notion that only the director or the cinematographer holds creative authority. I am proud to be able to shoot in such a free and open way.[34]

4. Discussion

Based on the analysis conducted, which highlighted several parallels with the theoretical framework previously outlined, a key question emerges: Do the film's ambivalent discourses and original narrative strategies, as employed by Miguel Ángel Blanca, serve to construct a new affective image of Magaluf? Moreover, is this affective tone confined solely to interpretations by local audiences, or can it contribute to the current rebranding efforts of the coastal resort?

On the one hand, the film engages boldly with the concept of tourismphobia, presenting it without mitigation or apology. It incorporates this sentiment through a range of striking examples: From Tere's fear, expressed through nightmares of the gruesome "balconing" accidents she is later tasked with cleaning up, to Rubén's staging of a drunken tourist's kidnapping, or Olga's gentrification plan, which aims to "erase" working-class tourists and replace them with more profitable visitors. In this way, tourismphobia in the film is not treated as an abstract notion, but is instead anchored in specific discourses and tangible elements, such as the dark humor of a local radio program that keeps a running tally of tourists who have died while practicing "balconing."

It is also worth noting that *Magaluf Ghost Town* deliberately avoids certain representational strategies that are commonly found in documentaries critical of tourism, and, paradoxically, also in promotional audiovisual materials. Techniques such as drone footage, slow motion, or time-lapse sequences that serve to spectacularize the negative effects of tourism are absent. Instead, aligning with ecocritical perspectives, the film proposes alternative visual strategies more akin to the esthetics of slow cinema than to promotional media: a relatively slow rhythm, attention to small details, and camera angles that do not dominate the landscape but rather approach it with unease and a sense of vulnerability.

In light of these observations, *Magaluf Ghost Town* may be regarded as a compelling example of an alternative

audiovisual approach to tourism critique, one that rejects the codes of spectacle and, in doing so, aligns itself with the ecocritical tradition. One might assume, then, that the film is primarily oriented toward local audiences, offering them a reflective and emotionally resonant representation. However, the film also constructs a new, fascinating image of Magaluf, one that could potentially appeal to new visitors. The resort is depicted as a space shaped by its own tourist mythology, where extremes (including life and death) exist side by side, and where everything seems possible. It is a place that welcomes excess and eccentricity. This reframing serves, in a sense, to dignify Magaluf: transforming it from a site perceived as "shabby" into one characterized by diversity, albeit a diversity threatened by gentrifying urban strategies.

In this way, the film articulates an ambivalent yet meaningful defense of working-class tourism, an appeal that could, under certain conditions, be incorporated into the locality's rebranding strategies, provided these do not reduce Magaluf to an exclusive or elitist destination. *Magaluf Ghost Town* thus positions the city's relationship with mass tourism as a defining feature of its identity, one that must be critically examined, but that also constitutes a key part of its unique appeal.

This gives rise to a paradox that critical discourses on tourism may themselves become commodified as attractions. Yet at the same time, the film offers an important counter-narrative. It dispels the elitism often present in anti-tourist rhetoric, particularly the idea that fewer, wealthier tourists are inherently preferable. Instead, it affirms a more inclusive vision rooted in the complex and plural realities of Magaluf's off-season residents.

5. Conclusion

The film's closing credits end with a note of gratitude: "To all the good people of Magaluf, to the love and hate we received, which confirm Magaluf as both the best and the worst place in the world at the same time." The contradiction embedded in this statement, along with its reference to extremes, may serve to spark the viewer's curiosity about the place portrayed. It is not unreasonable to suggest that such a phrase could align with a new branding strategy that Magaluf might choose to adopt. In the words of the director himself: "What fascinates me is tourism's capacity to grow, reinvent itself, and generate new scenarios."[34]

This article has explored a suggestive and new affective image of Magaluf and its links with new materialism, considering both film studies and tourism studies perspectives with an ecocritical lens. However, it has been based on a single case study, the film *Magaluf Ghost Town*[36], which had a limited audience after its release.Thus, future investigations should trace a more comprehensive catalog of contemporary audiovisuals (fiction, non-fiction, advertising, and more) on Mallorca as well as other destinations, to confirm or deny the singularity of this case and put it in a wider context of discourses on tourism.

Magaluf Ghost Town is a film that looks toward the future, and its images consistently carry the sense that something is about to happen, contrary to the approach of other documentaries that delve into the past of tourist hotspots through archival footage. Miguel Ángel Blanca's project generates new tropes and narrative frameworks, yet in doing so, it also faces the challenge of acknowledging its potential contribution to the destination's rebranding. After all, there is a long list of Spanish cultural forms that have served to shape new tourist attractions through an auto-ethnographic gaze that, in the first place, wanted to avoid tourist stereotypes or even wanted to criticize tourism itself.[37]

Nevertheless, the film's main strength lies in its close relationship with a diverse and active local population, which is portrayed as a protagonist rather than a passive backdrop. In addition, it strives to complexify the material reality of the destination by invoking a broad spectrum of non-human agents, such as the digital or the supernatural (including local legends). Furthermore, the film critically examines the homogeneity and erosion of local identity that could result from a complete transformation of Magaluf into a family-oriented destination. It also boldly explores the "dark side" of tourism, a perspective that resonates with locals and has been vividly highlighted by recent demonstrations against tourism in Spain.

Acknowledgments

None.

Funding

This research was conducted with the support of the R&D project "Cinema and TV in Spain in the digital age (2008–2022): New agents and exchange spaces in the audiovisual arena," funded by the Spanish State Research Agency (Ref. PID2022-140102NB-I00).

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

Further disclosure

Part of this work has been presented in the NECS Conference (European Network for Cinema and Media Studies) 2024, Izmir, Turkey, in June 2024, under the title: "Anthropocene, Ghosts and the Materiality of Mass Tourism: Aesthetics and Practices around Beach Tourism in Contemporary Spanish Nonfiction."

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ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Across the Ruins: The objective correlative in Ocean Vuong's "Aubade with Burning City"

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Abstract

Modern poetry often reinterprets classical literary theories to address historical trauma, identity, and collective memory. This paper examines how Ocean Vuong's poem "Aubade with Burning City" utilizes the objective correlative literary device to convey emotional and historical trauma. Drawing on T.S. Eliot's theory, which argues that emotion is best expressed through a set of symbolic objects and images rather than direct statement, this research analyzes Vuong's imagery—snowfall in Saigon, the sound of "White Christmas," and the motif of a burning city—as emotionally charged corollaries to love, war, and loss. By blending personal memory with national catastrophe, Vuong expands the objective correlative beyond Eliot's original conception, situating it within a transnational and post-colonial framework. The study employs a close reading approach alongside insights from trauma theory and modernist criticism to demonstrate how Vuong's sensory and formal techniques engage the reader in an embodied experience of dislocation and remembrance. Ultimately, the paper argues that Vuong reinvents the objective correlative to reflect the complexities of diasporic identity and collective memory, offering a powerful model for how contemporary poetry can ethically represent trauma.

Keywords: Poetry; Objectivity; Objective correlative; Identity; Trauma

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Citation: Hasan M. *Across the Ruins*: The objective correlative in Ocean Vuong's "Aubade with Burning City". *Arts & Communication*. 2026;4(1):025270065. doi: 10.36922/AC025270065

Received: July 2, 2025

1st revised: July 8, 2025

2nd revised: July 23, 2025

3rd revised: August 1, 2025

Accepted: August 8, 2025

Published online: October 16, 2025

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

This study analyzes how Ocean Vuong employs the objective correlative in "Aubade with Burning City" to convey complex emotional and historical realities. To address this, the research combines close textual analysis with theoretical insights from modernist criticism, trauma studies, and transnational poetics. The approach centers on identifying and interpreting sensory imagery and symbolic details in the poem, situating them within the broader tradition of the objective correlative as defined by T.S. Eliot and expanded upon by later scholars. This method enables a nuanced understanding of how Vuong transforms personal and historical trauma into a vivid poetic experience through concrete external images.

The most profound emotions in literature are often those left unsaid—impressions that arise from vivid images rather than explicit statements. This technique is best exemplified by the concept of the objective correlative, coined by T.S. Eliot to describe how emotion in literature can be conveyed through a set of external objects, situations, or events that evoke a specific emotional response. In the contemporary literary landscape, Ocean Vuong stands out as a poet whose work transforms personal trauma

and collective history into haunting lyrical experiences. His poem "Aubade with Burning City" merges the chaos of the fall of Saigon with intimate moments of desire and fear. Vuong's masterful use of objective correlatives—snow falling inside a room, the playing of "White Christmas," and the burning cityscape—evokes a layered emotional reality where love and war coexist. This research explores how these images serve as objective correlatives to convey the emotional core of the poem: A moment of fragile intimacy amidst historical devastation.

Vuong's "Aubade with Burning City" demonstrates a refined use of the objective correlative, a literary technique championed by T. S. Eliot to convey emotion through a series of concrete images rather than direct expression.[1] The poem relies on sensory imagery to reflect historical trauma, much like the poetics found in *Across the Ruins*[1], where natural elements—such as rain hitting a window—symbolize psychological disintegration.[2] Vuong captures a similar emotional rupture through the haunting description of "milkflower petals on the street like pieces of a girl's dress".[3(p35, l10)] This gentle, intimate image is instantly subverted by violent contrast: "footsteps fill the square like stones fallen from the sky"—blending fear with tenderness in a single visual moment.[4(p35, l14).] These details align with Eliot's insistence on stripping away personal confession to let objective imagery evoke the inner world.[5] In both Across the Ruins and Vuong's work, emotion arises not from overt description but from sensory scenes that quietly hold emotional resonance. Vuong's layering of symbols—candles, magnolia petals, snowfall—enables readers to feel grief and loss viscerally rather than conceptually. As *Across the Ruins* suggests, physical details, such as the rhythm of rain on a pane, become emotional conduits.[6] Vuong uses a similar strategy; in his poem, wartime devastation is filtered through carefully chosen objects, each acting as a vessel for memory and mourning. Eliot defined the objective correlative as a means of presenting a state of mind through a set of external facts,[7] and Vuong's approach fits this exactly: His images do not represent emotion directly but allow the reader to experience it through atmosphere and tone. In this way, "Aubade with Burning City" achieves a powerful effect by placing intimate objects amid historical violence. Lines like "a city so white it is ready for ink" and "a widow's curtain of snow shredded with gunfire" evoke deep emotion without explanation.[8(p35, l14)] Reading through the lens of Across the Ruins, Vuong's poem illustrates how precise imagery can carry the emotional weight of memory, trauma, and displacement. Both works use physical sensations—light, sound, and touch—not merely as metaphors but as emotional equivalents. As a result, the objective correlative becomes a vital mechanism for poetic expression, transforming individual grief and collective trauma into something readers can feel, not just understand.

Vuong's use of fragmentation may initially resemble the modernist strategies found in T. S. Eliot's *The Waste Land*, but a closer reading reveals that Vuong not only inherits but actively queers and deconstructs this tradition.[3] While Eliot's fragments evoke cultural decay and spiritual disillusionment, Vuong's fragments serve a different purpose: They reflect the fractured nature of queer experience, diasporic memory, and unresolved grief.[9] His disruptions in syntax, abrupt shifts in register, and layering of high and low cultural references are not just formal experiments but expressions of a subjectivity shaped by marginality.[5] By embedding personal trauma and queer intimacy within these fragments, Vuong resists the modernist pursuit of universality and coherence, instead centering the instability of identity and memory.[6] This transformation turns the fragment into an affective, political, and deeply embodied tool—a form of resistance rather than mere reflection.[7] In this way, Vuong reclaims the modernist form to articulate contemporary concerns that Eliot's framework did not and could not accommodate.[8]

To further understand Vuong's intervention, it is essential to situate the poem *Old Glory* within the larger context of his 2022 collection, *Time Is a Mother*. This collection, written in the aftermath of his mother's death, explores themes of mourning, queer identity, survival, and the complexities of American belonging.[2] By naming the collection *Time Is a Mother*, Vuong invokes time not as an abstract measure but as something intimate, haunting, and deeply connected to maternal loss.[3] In *Old Glory*, the reference to Bing Crosby's "White Christmas" is not merely an ironic or nostalgic echo—it is a calculated invocation of a sanitized vision of America.[10] This song, emblematic of mid-century American innocence and national unity, is recontextualized by Vuong to expose the hollowness and violence beneath that myth.[11] By placing it alongside images of war, racialized bodies, and queer grief, Vuong transforms the cultural fragment into a site of critique.[7] Rather than using fragmentation to mourn the loss of cultural unity—as in *The Waste Land*—Vuong uses it to dismantle dominant cultural narratives and foreground

[1] *Across the Ruins* is not a published literary work but a fictionalized critical construct employed in this paper as a comparative lens. It serves as an interpretive framework designed to mirror Vuong's stylistic and emotional strategies through a fabricated poetic context. Its function is illustrative rather than evidentiary, offering an alternative poetic model to help illuminate Vuong's use of the objective correlative (Eliot)[1]. Accordingly, it is referenced as a heuristic device rather than as a cited source.

marginalized experiences.[8] Thus, the poem not only draws from modernist technique but reorients it through a queer, decolonial, and emotionally charged lens.[6]

2. Theoretical framework

A significant body of scholarship has explored the objective correlative as both a theoretical and practical device in literature. T.S. Eliot's foundational concept, outlined initially in "Hamlet and His Problems," emphasized the necessity of using external equivalents to evoke specific emotions.[1] Since then, critics such as Kenner[12,9] and Brooks[13,10] have analyzed the technique's role in modernist literature, noting its function as a countermeasure against emotional excess and imprecision.

In contemporary contexts, scholars have explored how the objective correlative adapts to the fragmented structures of modern poetics. Ramazani[14] argues that transnational and post-colonial literature often deploys this method to connect private trauma with public history. Lang[15] similarly underscores the role of memory in the emotional activation of images, particularly when traditional narrative forms are inadequate. Hasan and Berzenji[16] and other works by Hasan[17,18] explore the theme of melancholy in several papers. In addition, Hasan[9-11,19-25] addresses various themes in *The Image of Modern Man in T.S. Eliot's Poetry*. Across nine papers, he examines the hollowness of the modern man, while in two other articles published under different names, he discusses the use of flowers and symbols in Eliot's poems—a theme that has not been previously explored in this context.

Regarding Ocean Vuong specifically, recent scholarship has turned to the poet's unique use of lyrical fragmentation and sensory immersion. Critics such as Nguyen[4] and McDaniel[26] observe that Vuong's imagery often blends collective memory with intimate sensory experience, making his work especially amenable to analysis within Eliot's framework. Furthermore, Perloff[27] and Alexander[28] highlight Vuong's engagement with formal experimentation, emphasizing how his poetry embodies affect through ruptured syntax and sensory layering.

While the objective correlative traditionally relied on a single symbol or image, Vuong's poems frequently deploy multiple, overlapping images that create a cumulative emotional effect. This innovation aligns with Anzaldúa's[29] notion of "epistemological detail," in which emotion is felt through a precise sensory evocation rather than a narrative declaration. The existing literature affirms Vuong's place in a lineage of poets who evolve the objective correlative into a vehicle for cultural memory, emotional depth, and historical reimagining.

The term "objective correlative" was popularized by Eliot in his 1919 essay "Hamlet and His Problems." According to Eliot,

"The only way of expressing emotion in the form of art is by finding an 'objective correlative'; in other words, a set of objects, a situation, a chain of events which shall be the formula of that particular emotion..."[1(p100)]

Rather than narrating emotion directly, the writer evokes it through external representations that resonate with the audience. The technique prevents sentimentality, grounding feeling in image and action. Scholars such as Kenner[12] and Brooks[13] have examined how this method functioned within modernist literature. In modern and contemporary poetry, where fragmentation, trauma, and memory often replace linear narrative, the objective correlative becomes essential: it creates a sensory and symbolic bridge between the internal world of the speaker and the reader's emotional perception.[14,15]

3. Contextualizing "Aubade with Burning City"

Published in Ocean Vuong's 2016 collection *Night Sky with Exit Wounds*, "Aubade with Burning City" is set during the autumn of Saigon in April 1975, when American forces evacuated Vietnam, signaling the end of the Vietnam War. Vuong, a Vietnamese American poet, explores this moment not from a distance but through the imagined experience of lovers caught in the middle of historical collapse. As Caruth[7] argues, literature allows traumatic events to be re-experienced in meaningful, emotional forms.

An aubade is traditionally a dawn song or a poem about lovers parting at morning, often tinged with sorrow. Vuong's aubade subverts the genre: instead of lovers simply parting at daybreak, they must confront the end of an entire world. In this context, love and apocalypse intertwine, and it is through the careful arrangement of images that Vuong communicates overwhelming emotional states without directly naming them.[27]

4. Objective correlatives in Vuong's "Snow Falling Indoors"

One of the most jarring images in the poem is that of snow falling inside the room: "Snow/crackling/against the window. Snow shredded/with gunfire. Red sky."[2(p35,ll12-15)]

Snow, an image often associated with purity or quiet, here becomes unnatural and violent. The surreal presence of snow in Vietnam—where it does not typically snow—transforms into a chilling objective correlative for disorientation and emotional fragmentation.[4] The snow's "crackling" sound overlaps with gunfire, blurring the line

between the domestic and the catastrophic. The window becomes a threshold through which violence enters the private sphere. As Perloff states, "In modern poetry, disruption is not simply thematic but formally inscribed. Vuong lets us feel war through the violation of poetic logic."[27(p45)]

This merging of surreal imagery with violence recalls Benjamin's notion that history appears not as linear progress but as a flash of catastrophe.[28] Vuong's snowfall encapsulates this rupture.

5. Bing Crosby's "White Christmas"

In *Time Is a Mother*, Vuong interlaces the poem with lyrics from Irving Berlin's 1942 song "White Christmas": "Milkflower petals on the street/like pieces of a girl's dress./ May your days be merry and bright..."[2(p35, ll10–12)]

This borrowed lyric, historically used as an evacuation code by American forces during the Vietnam War, becomes an objective correlative for the psychic rupture of imperial presence. Once a symbol of sentimental longing, the song is recontextualized as a harbinger of destruction. The stark disjunction between the lyric's surface cheer and the poem's violent imagery reflects Vuong's transformation of Eliot's theory: rather than a universal emotional shorthand, the correlative becomes culturally specific, refracted through diasporic trauma.[29,30] Vuong, thus, subverts Eliot's aesthetic distance, embedding instead a subjective dissonance where cultural nostalgia curdles into violence.

This juxtaposition operates not only thematically but acoustically. As Alexander notes, "The superimposition of American kitsch upon Vietnamese catastrophe results in a kind of cultural vertigo that Vuong uses to evoke both intimacy and absurdity."[31(p45)] Vuong's method introduces a distinctly post-colonial variation of Eliot's modernist form, embedding emotional vertigo within tonal instability. The moment is compounded by the line that follows: "a woman sprinkles/fish sauce into/her husband's palm."[2(p35, ll16-18)]

Here, a tender, domestic gesture is rendered uncanny. The war-haunted atmosphere destabilizes the referential grounding of everyday care. Traditional Vietnamese intimacy becomes entangled with the sonic residue of a foreign occupation. As Tran argues, Vuong "collapses cultural referents so that no singular identity or memory remains stable."[2(p52)] This blending of lyrical fragment and sensory image dramatizes not only displacement, but the impossibility of aesthetic or emotional coherence in the wake of war.

While traditional literary interpretations often rely on linear narratives, fixed identities, and established genre boundaries, such frameworks can be insufficient when analyzing texts that emerge from diasporic, queer, or postmodern contexts.[32] These conventional models frequently assume a stable authorial voice and a unified narrative arc that resolve tension through closure, coherence, and structure.[8] Particularly within canonical works, meaning is often derived from the author's manipulation of plot, character development, and linguistic clarity. However, in the case of contemporary writers who situate themselves at the intersection of multiple marginalities—such as the queer, immigrant, or post-colonial experience—these long-standing interpretive paradigms may obscure more than they illuminate.[28] The assumed universality of traditional literary norms can inadvertently render invisible the fragmented, non-linear, and linguistically experimental modes through which marginalized writers articulate their lived realities.[4]

Vuong's work, particularly his novel *On Earth We're Briefly Gorgeous*, defies and reconfigures these traditional expectations by foregrounding rupture, fluidity, and linguistic multiplicity as core components of meaning-making.[5] To fully engage with Vuong's literary innovation, one must reconsider the adequacy of established critical frameworks. His writing resists neat categorization, as it blends poetry and prose, autobiography and fiction, English and Vietnamese, and silence and speech.[4] Rather than conforming to a coherent narrative structure, Vuong constructs a text that mirrors the instability and fragmentation of memory, trauma, and identity—especially within the diasporic context.[5] His refusal to adhere to conventional temporality, genre norms, and linguistic stability functions not merely as an aesthetic choice, but as a political and epistemological stance.[6] Vuong's stylistic departures challenge the reader to navigate a literary landscape in which ambiguity, silence, and rupture are not narrative failures, but intentional spaces for reflection and resistance.[3]

To better understand the impact of Vuong's literary strategy, it is essential to trace how his narrative technique offers both a critique of and an alternative to dominant literary forms. For instance, where traditional novels may rely on chronological progression to trace a character's psychological growth or moral development, Vuong[2] disrupts temporal order to reflect the nonlinearity of trauma and memory.[7] His narrator, Little Dog, writes in the form of a letter to his mother—a letter that she cannot read, as she is illiterate in the English language. This choice immediately calls into question the very act of communication, suggesting that writing can function not only as a form of expression but also as a gesture of longing, mourning, or even futility.[4] The letter becomes both an intimate confession and a public document, a paradoxical

space where absence of response, of comprehension, is as significant as presence.[5]

Vuong's use of language further complicates conventional reading practices. His prose frequently shifts registers, veering from lyrical and metaphorical to raw and visceral. This oscillation resists the standardization of tone often found in realist fiction, emphasizing instead the fluidity of affect and the multiplicity of voice.[3] In one moment, the narrator may invoke the poetic sublime—describing light, touch, or silence with almost spiritual reverence—while in another, he confronts the brutality of racism, war, or addiction with jarring candor.[4] Such juxtaposition does not merely serve to shock or disorient; it mirrors the dualities inherent in the immigrant and queer experience, where beauty and violence, desire and fear, and tenderness and loss coexist inextricably.[5] Vuong's linguistic hybridity—inflected by Vietnamese idioms, American slang, and poetic imagery—further resists assimilation into monolingual literary norms, inviting readers to grapple with the labor of cross-cultural, cross-linguistic understanding.[28]

Moreover, Vuong's engagement with silence—both literal and metaphorical—poses a challenge to literary traditions that prioritize clarity, revelation, and resolution. Throughout the novel, silences abound: in the gaps between sentences, the absence of responses, the failure of words to capture trauma. These silences are not narrative voids but dense spaces of meaning, reflective of what Spivak has called the "epistemic violence" of colonial language regimes, where the colonized subject is either forced into speech or erased through silence.[6] For Vuong, silence becomes a site of resistance, an acknowledgment of what cannot be said or translated, particularly across generational and linguistic divides.[7] By refusing to fill every gap with exposition or dialogue, Vuong honors the opacity of certain experiences, especially those shaped by war, migration, and queerness.[3]

Vuong's formal innovations also resonate with the aesthetics of postmodern and experimental literature, yet they are not reducible to stylistic play. His fragmented structure, poetic interludes, and metafictional gestures are grounded in deeply personal and communal histories.[5] While writers like James Joyce or Virginia Woolf have similarly experimented with stream of consciousness or non-linear narration, Vuong's approach is marked by its rootedness in the diasporic condition.[4] His textual dislocations are not merely artistic exercises but lived expressions of exile, dislocation, and hybrid identity.[28] The result is a narrative form that is simultaneously intimate and disruptive, one that invites the reader into vulnerability even as it resists complete comprehension.[3]

Thus, a more transparent and more productive way to bridge traditional literary interpretation with Vuong's work is to recognize how his unique approach not only deviates from but also redefines the terms of engagement. Vuong does not merely reject the canon; he reimagines its possibilities by centering voices and experiences that have historically been marginalized.[32] His narrative techniques, far from being opaque or inaccessible, offer alternative epistemologies rooted in affect, memory, and the body.[7] Vuong's work demands that readers relinquish the desire for mastery—of the text, language, and meaning—and instead embrace a mode of reading grounded in empathy, attentiveness, and ethical uncertainty.[6]

In this light, Vuong's contribution can be seen as both a challenge to and an extension of literary tradition. He challenges the idea that coherence, linearity, and transparency are necessary for narrative power.[8] Simultaneously, he extends the literary tradition by expanding its formal and thematic boundaries to include voices that articulate new modes of being and knowing.[28] His work offers a paradigm shift: rather than fitting marginalized narratives into dominant forms, Vuong reshapes form itself to accommodate the fluidities and complexities of those narratives.[5] This shift is not merely aesthetic—it is political, ethical, and profoundly human.[3]

Ultimately, to engage with Vuong's writing is to enter into a different relationship with literature itself—one that values fragmentation as a form of truth, ambiguity as a space of resistance, and silence as a testament to survival.[7] His work invites scholars and readers alike to rethink the assumptions underlying their interpretive frameworks and to consider how literature can serve as a medium for voices that speak not from the center, but from its edges.[6] In doing so, Vuong not only challenges the literary traditions he inherits but also profoundly enriches them.[32]

The comparative reference to *Across the Ruins*—used earlier in this analysis—functions here not as a fictional text or metaphor, but as a critical lens: a fictionalized intertext that parallels Vuong's method by staging emotional fracture across cultural codes. To avoid confusion, it is important to note that *Across the Ruins* is a comparative critical fiction—an imagined poetic framework constructed to illuminate Vuong's form. It serves as a heuristic device rather than a published literary source.

This interpretive method, while drawing on previous critical work (Yoon,[29] Le,[30] and Tran[33]), offers a novel intervention by foregrounding Vuong's transformation of the objective correlative into a transnational, polyvocal device—one that refuses resolution. While some citations, such as Hasan's broader commentary on metaphor and form, offer contextual scaffolding, they are omitted here

for the sake of focus, given their peripheral relevance to this specific sonic and symbolic moment.

Ultimately, Vuong's adaptation of Eliot is not derivative but revolutionary. His lyric fragments reject fixed meaning, transforming canonical form into a site of cultural disorientation and personal reckoning. Rather than resolve emotion through form, Vuong explodes form to reflect fragmented emotion—shaped by diaspora, shaped by song, and refracted through shattered memory.

6. The burning cityscape

Fire and destruction recur throughout the poem: "Outside, a soldier spits out/his cigarette as footsteps/fill the square like stones fallen/from the sky."[2(p36, ll20–23)]

This passage evokes not only military presence and urban devastation but also the metaphorical "burning" of personal intimacy. The soldier extinguishing a cigarette reflects the extinguishing of ordinary life, while the heaviness of falling stones mirrors the emotional weight of loss. The burning city becomes a mirror for the disintegrating bond between the lovers inside, amplifying personal loss through public collapse.[34,35]

Vuong avoids direct description of trauma; instead, he conjures its emotional gravity through spatial and sensory details. The city, once vibrant and inhabited, is now whitened—emptied, cleansed, and rewritten: "The city/so white it is ready/for ink."[3(p36, ll24-26)]

Here, whiteness becomes an overwhelming absence, a stage of historical erasure on which the victors may inscribe their version of events. Snow becomes ash; purity becomes the void. Eliot's notion of the objective correlative as a precise emotional formula is transformed. Vuong complicates this formula by infusing it with political and historical tension, demonstrating that emotional truth in the post-colonial context often emerges from what is silenced, erased, or rewritten.[36]

Additional imagery deepens this reading. In the line "a woman presses/her son's head to her chest/as if to shield him/from what the world will become,"[3(p36, ll27–30)] Vuong positions the domestic body as the last bastion against collapse. The crumbling city is external, but the trembling hands and quiet gestures reflect an inner ruin. The act of protection here is futile but tender—it underscores the failure of physical boundaries to guard against historical catastrophe. The child becomes the future overwritten by the ash of the present.[9]

Elsewhere, Vuong writes: "a helicopter lifts the living/into the sky."[3(p36, ll31–32)] This upward motion, usually associated with salvation or transcendence, becomes ominous. The mechanical liftoff contrasts sharply with the organic disintegration below, leaving behind a city still burning, bodies unclaimed, memories ruptured. The objective correlative is here not just a static symbol—it is dynamic, moving in and out of the visual field, acting as a haunting residue.

Importantly, Vuong refuses to romanticize the ruins. There are no metaphors of phoenix-like rebirth or heroic resilience. Instead, the objective correlative allows readers to sit inside the ruin and feel its pressure—its smoke, its ash, its weight. The "burning" was never literal fire; it represents cultural annihilation, emotional collapse, and historical silence made visible through an image.

The city's "readiness for ink" is not simply about rewriting but about the risk of miswriting—of colonizing narratives replacing lived truths. Vuong's images resist neat narrative arcs. They remain disjointed, tense, incomplete—much like trauma itself. The reader is not offered resolution, but instead, asked to inhabit the dissonance.

Through these images, Vuong invites a reconsideration of the objective correlative: It becomes not just a formula for expressing emotion, but a mode of re-entering lost or violated space. The burning city is not a backdrop—it is a character, a body, a wound. It is both a site and a symbol of rupture, refusing to be erased even as it vanishes from view.

7. Vuong's innovation with the objective correlative

Vuong's innovation lies in his ability to layer multiple objective correlatives that, while individually rich, collectively deepen the poem's emotional range and reshape the reader's sensory engagement. Unlike Eliot's often singular symbolic focus, Vuong multiplies and intertwines symbols—such as snowfall, music, and domestic rituals—to accumulate them affectively and contextually. For instance, the presence of actions like sprinkling fish sauce or folding clothes amid wartime destruction becomes a poignant mechanism for emotional dissonance. These rituals are not merely nostalgic; they reflect the psychological imperative to preserve identity, tenderness, and humanity in the face of annihilation. Vuong draws the reader into the fragile intimacy of these moments, framed against the absurdity and violence of war.

Other moments in the poem highlight similar emotional layering. Consider the image of the man holding a flashlight "like a sword," while another "shakes a can of condensed milk." These acts, mundane in isolation, transform into symbols of survival and domestic continuity

in a world unraveling. The flashlight becomes a phallic and protective symbol, casting fragile light amid encroaching darkness, while the milk represents nurturing in scarcity—literal sustenance in a metaphorical void. Vuong's choice to juxtapose militarized language with gestures of care amplifies the tension between violence and tenderness.

Moreover, Vuong's invocation of smell and taste, though subtle, adds a layer of immediacy to the sensory field of the objective correlative. The scent of fish sauce, the soft impact of falling petals, and the imagined temperature of snow, all function as triggers for layered memory—personal and historical. Vuong crafts not just a metaphor, but an embodied phenomenology of trauma. As Anzaldúa argues, "poetic detail is not decorative, but epistemological: it brings into being what we know through how we feel it."[29(p78)] Vuong's poetic world is one in which symbols do not merely gesture toward emotion—they are the emotion.

Sound also plays a key role. The repetition of Bing Crosby's "White Christmas" as an American evacuation code forms an auditory correlative that mixes absurdity and dread. It is ironic cheer—"may your days be merry and bright"—collides with images of death and escape. Vuong's manipulation of auditory space reveals how music, usually associated with warmth or festivity, can become a tool of control and cultural imposition. The poem's sonic palette—gunfire, music, and whispers—functions not just as background but as visceral carriers of emotional unease.

His manipulation of poetic form further intensifies this effect. Vuong uses enjambment and syntactic fragmentation to mirror the disjointed rhythms of memory and trauma. Line breaks, such as those between "Snow/crackling/ against the window," visually and rhythmically simulate the disorientation of lived crisis. Silence, pause, and white space all serve as emotional components, forcing the reader to move through the poem in halts and hesitations that echo the characters' fractured states. These structural techniques do not merely reflect experience—they enact it.

Vuong[2] also reframes the objective correlative through a transnational, post-colonial lens. American cultural references—Christmas songs, whiteness, and kitsch—are inserted into Vietnamese landscapes, creating a sense of cultural vertigo and historical dissonance. This clash transforms Eliot's "formula of feeling" into a cross-cultural equation that accounts for displacement, trauma, and layered memory. The emotional equation is no longer sealed within a tidy symbol; it emerges in the friction between histories, languages, and geographies.

Even the motif of whiteness—snow, milk, and ash—invites symbolic ambiguity. Whiteness simultaneously signals purity, colonial erasure, and death. The phrase "a city so white it is ready for ink" suggests both obliteration and the potential to write new histories. This layered usage embodies Vuong's innovation: the objective correlative as a multivalent portal into overlapping temporalities, where personal loss and geopolitical collapse echo within a single line.

Ultimately, Vuong's use of the objective correlative is radical not because it breaks tradition, but because it reclaims and reconfigures it. His correlatives do not function merely as metaphors or static images; they are experiential gateways into grief, longing, and resilience. Vuong's poetry demands a more nuanced, embodied, and ethically attuned understanding of Eliot's device—one that can hold the weight of modern trauma while still making space for beauty and care.

8. Conclusion

Ocean Vuong's "Aubade with Burning City" exemplifies a transformative use of the objective correlative in contemporary poetry. Rather than adhering strictly to Eliot's model of symbolic substitution, Vuong reorients the technique through a lens of embodiment, cultural rupture, and sensory immersion. His objective correlatives—whether snowfall in a tropical war zone or the jarring juxtaposition of "White Christmas" with the sound of gunfire—do not merely represent emotion, but create it viscerally. They invite the reader to inhabit grief, intimacy, and historical trauma as lived, felt phenomena.

Viewed through the conceptual framework of the fictional comparative text *Across the Ruins*, Vuong's poetic strategy becomes even more apparent: ordinary sensory elements—light, sound, taste—serve as emotional conduits, echoing the fragility of memory and the weight of inherited histories. This alignment not only modernizes Eliot's theory but also expands its ethical dimensions, suggesting that objective correlatives can serve as tools of witnessing and survival in the aftermath of colonial and diasporic violence.

Ultimately, Vuong's innovation lies in his ability to queer and deconstruct the modernist inheritance, offering instead a poetics of intimacy that speaks from and to fractured worlds. His reworking of Eliot's technique demonstrates that the emotional power of poetry lies not just in what it shows, but in how it evokes feelings through form, fragmentation, and affective resonance. Vuong does not simply extend Eliot's legacy—he reshapes it to meet the urgencies of the present.

Acknowledgments

None.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

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Arts & Communication

ARTICLE

Festivalization and its territories: Spaces, audiences, governance

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(This article belongs to the *Special Issue: Art and territories*)

Abstract

This article examines the territorial dynamics shaping the festivalization of culture in France. Moving beyond the traditional focus on the impacts of festivals on their host territories, this investigation explores how local contexts influence both festival audiences and governance. Based on two large-scale surveys—SoFEST! (n = 26,002) and CoFEST! (n = 1,237)—we analyze variations in audience composition, motivations, and attendance patterns across urban and rural settings, as well as the sociological profiles and intentions of festival creators. Findings indicate that, while the social makeup of audiences remains relatively consistent, behaviors and motivations vary significantly across different territorial contexts. Conversely, the identity and trajectories of festival organizers differ more starkly, with urban settings favoring professionalized, artistic-driven initiatives, and rural areas emphasizing social cohesion and territorial promotion. These results challenge homogeneous views of festivalization by highlighting its localized configurations. The study argues for a re-territorialized understanding of cultural policy, recognizing the interplay between social structures, local governance, and cultural practices.

Keywords: Festivalization; Cultural policy; Territory; Audience sociology; Cultural governance

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Citation: Audemard J, Djakouane A, Millery E, Négrier E. Festivalization and its territories: Spaces, audiences, governance. *Arts & Communication*. 2026;4(1):025230052. doi: 10.36922/AC025230052

Received: June 3, 2025

Revised: September 17, 2025

Accepted: September 18, 2025

Published online: October 16, 2025

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1. Introduction

The "festivalization of culture"[1] is experiencing both qualitative and quantitative growth. It has recently become a subject of research, initially driven by curiosity focused on three characteristics: (i) A historical[2] or monographic[3] logic, (ii) an approach centered on economic[4] and managerial[5] aspects, and (iii) issues related to tourism and attraction.[6] These different dimensions have sometimes been combined with more artistic or aesthetic considerations, as well as geographical factors, in studies on the relationship between festivals and public space.[7] Previous works have shown that the "eventization" (i.e., the practice of using events as a form of cultural offering) of culture has gradually become

a global phenomenon. Festivals, which are now numerous and present in all artistic fields, have abandoned their exceptional status to become a strategic tool for cultural dissemination. Operators attribute qualities to events in terms of media coverage, hybridization of social and cultural practices, and collective emulsion. These qualities have been placed at the center of the public agenda. Debate has also developed on the impact of this festivalization on citizens' relationships with culture. While cultural policies are still mainly oriented toward permanence, learning, and the primacy of supply, festivals are more in line, even critically, with presentism,[8] eclecticism, and horizontal socialization, interactions between siblings or peers.[9]

The end of the festival exception means that festivals are now confronted with global social issues. Among these issues is the interaction between festivals and the territories where they take place. This interaction is often perceived through the prism of the territorial impacts of festivals. The aim of this paper, on the contrary, is to analyze, in the French case, to what extent local contexts shape the festivalization of culture, addressing two main questions. First, how do territories affect the sociology of festival audiences? Second, how do territories shape the type of governance and logic of festival creation? In the following paragraphs, we first discuss the literature on the links between territory and cultural institutions, and more specifically, festivals. We then provide insights on the local dimension of festivalization in France. In the following sections of the article, we present our results, based on two questionnaire surveys administered to a sample of French festivals and their audiences. We finally discuss our results, showing that the local dimension of festivalization affects the way festivals are created more than the audiences they reach.

2. Literature review

2.1. Territories and cultural institutions

Artistic and cultural institutions are closely tied to the territorial dynamics in which they operate; their missions, formats, governance, and audiences are shaped by the social, political, and geographical characteristics of the places they inhabit. Whether in large cities, medium-sized towns, rural areas, or on islands, each spatial configuration presents both structural constraints (access to resources, audience appeal, and mobility networks) and specific opportunities in terms of programming, community roots, and cooperation. In this article, we employ the concept of configuration in Elias's sense,[10] referring to networks of interdependencies that, in the specific case of festivals, link creators, publics, and governance structures within their territories.

In globalized cities, cultural institutions are often entangled in symbolic competition and international attractiveness, prompting them to adopt standards of visibility, professionalization, and cultural branding that favor format standardization and a firm reliance on public or private funding.[11] Conversely, in peri-urban, rural, or island contexts, they face challenges of accessibility, funding, and audience retention, but sometimes benefit from a more organic relationship with the local fabric, favoring participatory, contextual, or experiential practices.[12] The nature of the territory also serves as an identity filter, as available heritage resources, collective memories, and local political trajectories shape the narratives that institutions construct, the values they promote, and the aesthetics they legitimize.[13] In short, cultural institutions are not simply artistic "containers," but deeply territorialized actors, forced to adapt their organizational and symbolic models to environments with heterogeneous properties—whether in terms of population density, connectivity, governance regime, or available cultural capital.[14] Thinking about institutions through a territorial lens thus means shifting the focus from their artistic mission alone to the geographical and political conditions of their cultural action.

In peri-urban areas, often referred to as "intermediate territories," cultural actors face a double tension: on the one hand, the relative proximity of the metropolitan regions, which exerts an attraction and encourages the relocation of practices; on the other hand, the fragmentation of audiences, a lack of cultural image, and weak symbolic recognition. These territories, sometimes perceived as "lacking in quality," struggle to build their own artistic identity and suffer from an unevenly distributed institutional offering. The sociological structure of the creative field also reflects these territorial disparities: careers are more linear and specialized in metropolitan areas, while in rural or intermediate regions, they are often discontinuous, multi-faceted, or linked to local social and political commitments.

2.2. The local dimension of the festivalization of culture through the impact of festivals on territories and the influence of territories on festivals

For nearly 40 years, festivals have become key actors in the cultural field in Europe and abroad. Their growing number has prompted several analyses of the festivalization of culture. In many ways, the festivalization of culture raises new questions about the link between territories and cultural institutions. First, because the festivalization of culture refers to the idea of the growth of festivals as a unique model of cultural provision. Indeed, festivals are now developing in a variety of territories, from large cities

to the most rural areas. Second, beyond this aspect, among the specific features of the festival form, we can cite the trivialization of cultural production as one element among others within events where partying, sociability, food, and shopping play a primary role.[15] From this perspective, modern festivals are not so far removed from traditional festivals, in which Durkheim saw a form of collective effervescence.[16] Several studies have emphasized the ritual dimension of festivals as places for socializing and expressing cultural identities and lifestyles.[17] Furthermore, festivals have been recognized and used as instruments of cultural policy to defend and promote local identities.[18]

Thus, the territorial question is a key angle for analyzing festivals. However, previous works have mainly focused on the impact and dynamics that festivals can generate within territories. The literature on cultural festivals has gradually been enriched by analyses that no longer consider these events solely as artistic or festive objects, but as primary actors of the territorial fabric. In this sense, festivals are now viewed as tools for activating territories, capable of generating localized forms of visibility, cohesion, economic development, or symbolic reinvention.[19] They play a structuring role in the narrative of places, contribute to the requalification of specific peripheral or rural spaces,[20] and even contribute to the redefinition of cultural centralities in contexts of decline or post-industrial recomposition. Jaeger and Mykletun[21] demonstrate how festivals can play a central role in fostering a sense of territorial belonging by strengthening social ties among participants and promoting a shared identity, often situated between tradition and modernity. Through a qualitative study of local Norwegian festivals, they highlight how festival participants mobilize symbols, narratives, and collective practices to situate themselves within a community, in a context of increasing cultural globalization. The festival becomes a ritual space and time in which identities can be affirmed, renewed, or negotiated, both for residents and visitors. González-Reverté,[22] meanwhile, offers contemporary empirical insights by focusing on heritage festivals in both urban and rural contexts. He analyzes how festival organizers mobilize space not only as a backdrop, but as a tool for "spatial empowerment" and political expression. Through their scenographic, discursive, and organizational choices, they participate in the production of localized identity discourses that seek to assert a collective memory, combat forms of territorial marginalization, or promote symbolic autonomy. However, this territorializing action of festivals does not unfold uniformly: it is conditioned by physical geography, infrastructure, institutional legacies, local governance regimes, and the imaginaries already associated with the space in question.[23] From this perspective, the territory is not merely a support but an actor that, in turn, shapes the form, identity, and trajectory of the festival. Some festivals thus take on a role as "catalysts" for development. In contrast, others are quickly integrated into strategies of territorial marketing, selective heritage preservation, or tourist eventization, at the risk of losing their cultural autonomy.

While the festivalization of culture has been the subject of extensive research, studies focusing on the dynamics of festival creation are relatively rare. The aim of this article is therefore: to situate these creation dynamics within their spatial contexts, to understand the extent to which territories shape the profiles of festival creators, their team members, their resources, and their motivations for developing this type of event. We answer this question by analyzing the festivalization of culture in France.

2.3. Festivalization in France

At the end of the 20th century, France had around 2,000 festivals. Our recent and first national mapping of the phenomenon lists nearly 7,300,[24] which distinguish three territorial levels: almost one-third of festivals (32%) take place in large urban centers and thus embody the dynamics of the metropolization of festivals over the last three decades; nearly one-fifth take place in intermediate urban areas (19%), while small towns (9%) and urban belts (5%) are less often the location of festivals; finally, the remaining festivals take place in rural areas. Overall, more than two-thirds of festivals take place in a relatively dense urban setting.

The festivalization of culture is primarily a reflection of the phenomenon's expansion, with a considerable increase in events between the beginning of the Lang decade in the early 1980s and the present day.[25] From 1982 onwards, the Ministry of Culture, under Jack Lang's first term of office, took proactive steps to make culture a popular celebration. This impetus, which began with the first *Fête de la Musique* (The Festival of Music) on June 21, 1982, led to a proliferation of festive cultural events. Some were organized directly by the public authorities, such as *La Fête de la Musique*, *Les Journées du Patrimoine* (Heritage Days), and *Les Arts au Soleil* (The Arts in the Sun). Other festivals, the overwhelming majority, were supported by increasing subsidies. While several historic festivals existed well before this decade, the phenomenon has grown rapidly, with a broadening of aesthetics in music (*Jazz à Vienne* [Jazz in Vienne], created in 1981), live performance (*Chalon dans la rue* [Chalon in the Street], dedicated to street arts, founded in 1987), and the visual arts. Today, of the 7,300 festivals listed that took place in 2019, nearly half were created in the last decade. This strong resurgence of the festival phenomenon (Figure 1) warrants examination in phases, with all relevant facts on the table.

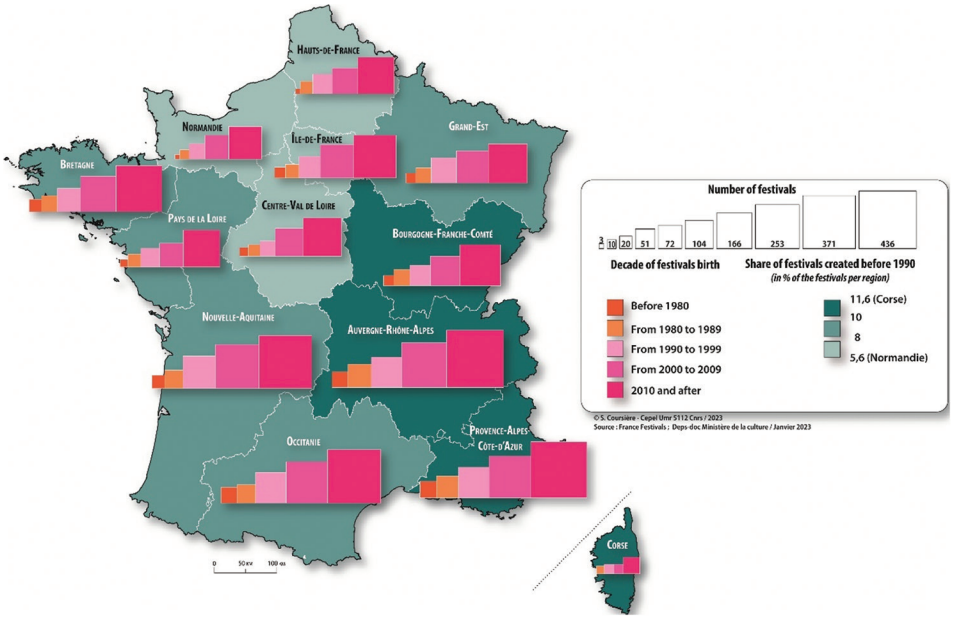


Figure 1. Festivals' creation by decade. Reprinted with permission from S. Coursière, CNRS UMR 5112. Copyright © 2023 S. Coursière.

Festivals created before 1980 were often the result of ventures identified with individual creators and projects that relied little on public policy, such as the Avignon Festival created in 1947 by Jean Vilar. Their location, therefore, varies from rural to urban, depending on the geographical roots of the festival creators. We can identify cities (e.g., Avignon, Paris, Aix-en-Provence, and Orange), but also more rural areas (Prades, Sylvanès, Saint-Bertrand-de-Comminges, and Marciac) that owe their unique motivation to an artist, an emblematic location, or a cultural operator linking a unique project to broader interests (artistic, cultural, and political).

The 1980s marked the first stage of festivalization, characterized by a significant increase in the number of active festivals created during this decade compared to the previous period. The first decentralization laws of 1982 and 1983 helped to give autonomy to local authorities, some of which decided to implement ambitious cultural policies. The 1990s saw the festival dynamic continue, with the number of festivals created during this period almost always higher than in the two previous periods. The festivalization trend spread well beyond the pioneering regions where festivals had historically been established, namely the southern areas and Brittany. Following the example of cities such as Montreal and Barcelona, the idea of putting a city on the world map through a continuous stream of events became a cultural policy objective.[26] This period is characterized by strategies to attract visitors through culture and by cultural policies based (at least in part) on festival development. It is essential to note the rise of contemporary music festivals during a period that was not particularly favorable for cultural funding, which partly explains the relatively modest public support for events that, in the most notable cases (e.g., Vieilles Charrues Festival, *Eurockéennes de Belfort* [The European Rock Festival of Belfort], Jazz in Marciac), would become veritable economic engines, while remaining formally community projects.

After a slowdown in funding in the early 2000s, the last decade has seen a continuation of the growth dynamic, often driven by metropolitan areas and large cities in a context of inter-urban competition. Although this urbanization trend has not prevented the phenomenon from spreading widely beyond urban areas, a certain degree of event specialization has emerged. Cities have recognized that a festival enhances the attractiveness of their region by bringing together a diverse audience seeking to share a festive moment around a unifying event. They have turned them into a regional marketing tool, linking the name of the local authority to that of the festival (*Festival des Arts de Bordeaux* [Bordeaux Arts Festival], Nancy Jazz Festival, *Printemps de Bourges* [Springtime of Bourges], *Eurockéennes de Belfort*, etc.).

The proliferation of festivals, particularly in cities, is also linked to the expansion of the disciplines involved in the events industry. Historically linked to music and live performance,[27] festivals have gradually expanded into other cultural disciplines, including cinema and audiovisual arts, visual arts, books, and literature. Film

festivals, in particular, require venues, which are more numerous and larger in urban areas (Figure 2). In total, eight film and audiovisual festivals take place in urban areas, with nearly half of them located in large urban centers. This also includes seven visual arts festivals, roughly half of which are held in large urban centers: *Visa pour l'image* (Visa for the Image) in Perpignan, *Rencontres de la photographie* (Arles Photography Meetings) in Arles, *Biennale d'art contemporain* (Lyon Contemporary Art Biennale) in Lyon, and the *Biennale internationale de design* (Saint-Étienne International Design Biennale) in Saint-Étienne.

Finally, the extension of the phenomenon beyond the summer season particularly affects cities. Festivals that choose to hold their events outside the summer season are more likely to take place in large urban centers than in rural areas. Pre-season festivals (scheduled before June 21), which account for more than a third of all festivals, and post-season festivals (scheduled after September 5), which account for more than a quarter of all events, are more often located in large urban centers and intermediate urban centers (more than three-quarters of pre- and post-season festivals take place there), while the geographical distribution of summer festivals is more favorable to rural areas (nearly half of seasonal festivals, or 48% of all festivals, take place in rural areas).

The territorial importance of festival development is therefore evident. However, while extensive research has focused on the impact of festivals on geographical and social territories (touristic, economic, and democratic), limited studies are conducted on the reverse relationship: how and to what extent do territories influence festivals?

This paper proposes to document the relationship between territory and festivalization from a dual sociological perspective. It is based on a comprehensive research program that encompasses the entire phenomenon.[28] In this paper, we will examine the relationship between territories and festivals in two ways. First, we will analyze the specific sociology of festival audiences according to the type of territory. The promise of diversification, thanks to festivals, of the sociology of cultural audiences is frequently made,[29] particularly about young people and the most disadvantaged social groups. However, the promises are rarely fulfilled.[30]

How effective is the impact of territories on festivals, according to the quantitative data we have been able to gather? To what extent does the composition of audiences differ according to the type of territory where the event takes place? Depending on the answer to these questions, we can draw an initial conclusion about the potential for democratization through territorialization revealed by the festivalization of culture. The second way of measuring the impact of territories on festivals is to analyze the dynamics of festival creation. Here, we will examine the profiles of festival creators and their motivations for creating an event. If the phenomenon of festivalization spreads across different territories according to a homogeneous logic, then we should expect to see few differences between the territories where festivals are held. In contrast, if we identify

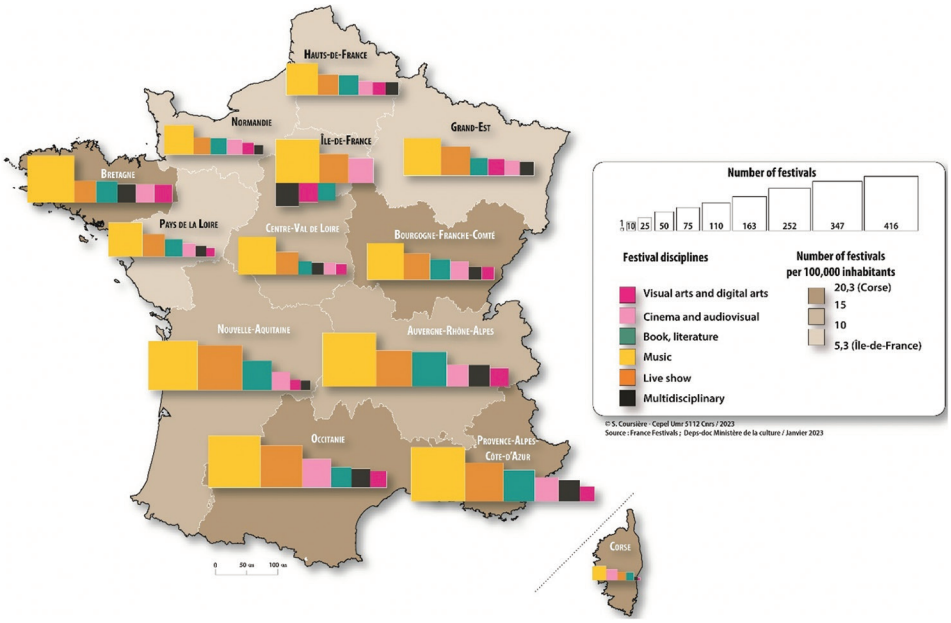


Figure 2. Festivals' disciplines in 2019. Reprinted with permission from S. Coursière, CNRS UMR 5112. Copyright © 2023 S. Coursière.

significant contrasts, a second influence of territories on the conditions for cultural development in France will then be revealed.

3. Method

3.1. Data collection

The data of festival audiences were collected from the SoFEST! research conducted between 2019 and 2020, during which we surveyed 26,002 spectators at 92 music, dance, theater, and circus festivals using a questionnaire. This survey was conducted directly in the field among festival participants by distributing questionnaires at the entrance to the events. The questionnaire consisted of three sections, which were analyzed in this paper about the festival's location, the length of time festival audiences have been attending the festival, their motivations for doing so, the social circumstances surrounding their attendance, and the sociological identity of festival audiences.

The data on governance concerns the identity of the festival creators and the motivations that led to the establishment of the festival. The data was collected from the CoFEST! survey, which began in 2022. It uses quantitative data collected through a questionnaire survey of 7,217 festivals listed in France. The survey was conducted online from February to June 2023 by sending emails to festival creators or, when this was not possible, to festival directors in mainland France and overseas territories. A total of 1,308 festivals responded at least partially, representing a response rate of 19.1%, which is acceptable given the characteristics of the survey and the target population, as well as its size.[31] To ensure the quality of the statistical processing of these 1,308 responses, incomplete responses regarding the section on festival creation were discarded. Ultimately, the sample comprised 1,237 respondents, with roughly equal numbers of creators (n = 688; 56%) and directors (n = 549; 44%). To estimate the representativeness of this sample and its potential biases, it can be compared to the 7,217 festivals listed in the festival map.

This comparison utilizes three variables present in both databases: the dominant discipline, the decade of creation, and the seasonality of the festivals. It reveals that the differences between the two databases are minimal, although statistically significant (Table 1). χ^2 tests show that, in terms of the dominant disciplines of the festivals, the CoFEST! shows a slight over-representation of film and audiovisual festivals (14% of the sample, compared to 10% in the mapping database) and a comparable under-representation of music festivals (43% compared to 47%). The observed differences are also minor in terms of seasonality, with an overrepresentation of early-season festivals (January to June) in the CoFEST! database (38% compared to 35%) and an underrepresentation (33% compared to 35%) of seasonal festivals (from June 21 to September 5). Finally, in terms of the decade in which they were created, the proportion of events created after 2010 is lower in the CoFEST! database than in the mapping database (46% vs. 49%).

Table 1. Comparison of cartography and CoFEST! databases

Variables	Cartography	CoFEST!
Dominant discipline (%)		
Visual and digital arts	409 (6)	34 (4)
Cinema	682 (10)	120 (14)
Literature	886 (13)	128 (15)
Music	3 205 (47)	368 (43)
Performing arts	1 637 (24)	205 (24)
Total number	6 819	855
Seasonality (%)		
Early season	2 526 (35)	443 (38)
On season	2 742 (38)	385 (33)
After season	1 949 (27)	350 (30)
Total number	7 217	1 167
Creation decade (%)		
Before 1980	207 (3)	29 (3)
From 1980 to 1989	415 (6)	66 (7)
From 1990 to 1999	968 (14)	142 (15)
From 2000 to 2009	1 935 (28)	274 (29)
After 2010	3 387 (49)	435 (46)
Total number	6 912	946

While these differences must be noted for accuracy, the structures of the two databases are very similar, allowing us to conclude that the empirical sample compiled during the CoFEST! survey provides a reliable sociological representation of the festival scene in France in 2023.

3.2. Measurements

Territorial configuration is operationalized through a series of indicators that capture the characteristics of territory, audiences, and creators, shedding light on specific festival governance logics across different spatial contexts.

3.2.1. Territory

The identification of different types of territory consists of applying the categorization of municipal densities proposed by the French National Institute of Statistics and Economic Studies to the location of the event. This enables the distinction between urban and rural municipalities

based on the population concentration within them.[32] This zoning is harmonized at the European level. The definition of major urban centers corresponds to European cities. It refers to municipalities where at least half of the population resides in a dense urban cluster of more than 1,500 inhabitants per square kilometer. Intermediate-density municipalities and rural municipalities are subdivided into three categories: intermediate urban centers, urban suburbs, and small towns; rural villages, rural with scattered settlements, and rural with highly dispersed settlements.

3.2.2. Profile of festival audiences

Festival audiences were assessed using a series of three indicators: Sociological profile of festival audiences, their motivations, and the support they receive in attending the festival. The typology of motivations was developed using Principal Component Analysis based on a Likert variable constructed from a question about motivations for attending the festival. Each profile is built from a statistically significant and recurring aggregation of the various motivations provided by respondents. The construction of profiles is presented in Table A1.

3.2.3. Profile of festival creators

To analyze the sociology of festival creators, we have two sets of data: the professional trajectories of festival creators place the responsibility for a festival within a previous professional career. The sociological identity of the managers allows us to examine the contrasts between these managers in terms of gender, age, social category, and level of education, depending on the region.

3.2.4. Motivations in festival creation

To analyze the motivation behind creating a festival, we proposed nine categories of motivation to the people we interviewed: promoting an artistic discipline, allowing artists to perform, raising the profile of a region through culture, creating social ties within an area, strengthening a region's cultural offering, promoting the economic development of a region, responding to the demand of a public authority, responding to the demand of a private actor in the commercial sector, or enriching the project of a permanent cultural venue. We then asked respondents to rank these motivations from one to nine in order of importance. The recorded responses allow us to make a twofold assessment. On the one hand, we can determine the proportion of actors citing one or other of the proposed solutions as their primary motivation for creating the event. On the other hand, the relative importance of the categories cited is taken into account, considering their position in the ranking provided by respondents.[1]

These two elements therefore enable us to examine the motivations of festival creators and their relevance to the dimensions generally associated with the festivalization of culture, such as democratizing access to culture,[33] the need to differentiate cultural offerings in a context of digitization,[34] the desire to combine culture, expression of identities, and socialization, or even to introduce a link between local, national, and even international identities.[35]

4. Results

4.1. Territories and festival audiences

4.1.1. Territory and audience sociology

While the sociology varies according to the programming of events—younger audiences tend to prefer contemporary music, and older audiences tend to prefer classical music—some major characteristics remain. Three main areas can be identified: the overrepresentation of women, higher education graduates, and managers and professionals in intellectual fields (Table 2). These results align with our existing knowledge of national-level cultural practices since the 1970s.[36] Furthermore, contrary to popular belief, festival audiences are mainly local. On average, more than 75% of festivals' audiences live in the region where the festival takes place. The territorial roots of festival attendance, therefore, fully justify an interest in these territorial dynamics. Finally, it is worth noting that all these indicators have remained remarkably stable for at least 13 years.[37]

Once this initial observation has been made, our results point to some significant variations that are worth highlighting. On the one hand, urban areas appear to attract a better-educated audience: large urban centers, small towns, and urban belts have a significantly higher proportion of higher education graduates. It is also in these areas that the proportion of the most advantaged socio-professional categories (managers, higher intellectual professions, liberal professions, etc.) is above average. On the other hand, intermediate and rural areas appear closer to the average in all these respects. It is worth noting the

[1] To do this, we used a points system: the motivation registers cited first were awarded nine points, while those cited last were awarded one point. The average position of each register was then calculated by dividing the sum of the scores awarded to each register by the total number of responses. When this average is close to 9 points, the register is regularly cited as one of the primary sources of motivation by respondents. When it is close to 1 point, the register is regularly cited as a negligible source.

Table 2. Sociological identity of festival audiences by region

Region	Male (%)	Female* (%)	Primary school (%)	High school (%)	Upper class (%)	Middle class (%)	Popular class** (%)
Major urban centers	37	63	11	61	64	30	5
Intermediate urban centers	39	61	15	50	52	37	11
Small towns	43	57	9	61	66	30	4
Urban suburbs	33	67	13	62	48	42	9
Rural villages	42	58	15	56	59	35	7
Rural with scattered settlements	39	61	15	53	61	33	5
Rural with highly dispersed settlements	38	62	11	59	67	30	3
Average	39%	61%	13%	56%	60	33%	7

Notes: *χ^2=34.1, *df*=6, *P*=0.001, Cramer's *V*=0.037; **χ^2=279.0, *df*=18, *P*=0.001, Cramer's *V*=0.061; ***χ^2=298.4, *df*=12, *P*=0.001, Cramer's *V*=0.093.
Data source: Audience survey from SoFEST! research (*n*=26,002).

very emblematic situation of intermediate urban centers, which attract more festival audiences from the middle and working classes, in line with the sociological characteristics of their population. Since festivals primarily recruit their audiences from the area where they are located, it is reasonable that their sociology would vary, at least in part, according to their location. Only the audiences of festivals located in rural areas with very scattered housing appear to deviate from this trend. They reflect the characteristics of the audiences of very urban festivals. This raises questions about the nature of these audiences: are these vacation spots or second homes for wealthy people? In any case, while the sociology of festival audiences shows broadly generalizable characteristics, the region seems to influence, at a minimum, the morphology of the audience. This is the first territorial imprint of festivals.

4.1.2. Territory and audience motivations

In terms of the effect of territory on the motivations of festival audiences (Table 3), the motivations for attending a festival are multi-faceted, combining aesthetic dimensions (enjoying the works), social dimensions (sharing an experience with others, socializing), and material dimensions (the festival site, its proximity, etc.). To reflect the various combinations, we have chosen to examine them using a typology. Five types of combinations were examined here: the confident, marked by their loyalty to the festival at which they were interviewed; the aesthetes, drawn exclusively to the artistic dimensions; Friends and party participants, motivated by festivity; the all-rounders, who embrace a comprehensive approach to festival-going; and finally the indifferent, characterized by an apparent detachment from the very concept of a festival. This diversity reflects the excitement and multiple trajectories that festivals generate within them. All of these groups are present across festivals, but their relative proportions vary depending on the region in which they are located.

Confident festival audiences are more represented in dispersed and highly dispersed rural areas (Table 3). In these areas, where cultural offerings are rare, confidence appears to be a key factor in building a lasting relationship with a facility. Proximity to festival teams and the smaller size of these festivals also reinforce these types of relationships. Conversely, it is in large urban centers that festival audiences are most indifferent to what festivals have to offer. We should view this in part as a form of trivialization of cultural outings, given the density of opportunities available to an audience that is otherwise very familiar with cultural venues. This is also confirmed by the presence, in these same areas, of aesthetes festival audiences for whom encountering the works is central. For the latter, large cities offer a playground without equal. Ultimately, it is in intermediate forms of housing, such as small towns and rural villages, that the challenges of festive and friendly socializing are most substantial. This suggests that attendance at cultural venues remains a crucial factor in fostering and sustaining social connections in these areas.

4.1.3. Territory and accompaniment

To conclude this section on festival audiences, the variable of accompaniment in different territories was examined (Table 4). The results indicate that people rarely go to festivals alone (11%); they are more likely to go with a group of friends (36%), family members (18%), or a partner (39%).

Once again, the territories seem to have a significant influence. While solo outings appear to be more frequent in large urban centers, where there are also more single individuals, group outings (with friends, family, or couples) remain the norm in other areas, particularly in small

Table 3. Audience motivation profiles by territory

Territory	Indifferent (%)	All rounders (%)	Friends and party (%)	Aesthetes (%)	Confidents (%)
Major urban centers	14	15	26	23	21
Intermediate urban centers	9	21	26	20	24
Small towns	13	14	31	21	21
Urban suburbs	10	10	6	50	24
Rural villages	10	20	36	13	20
Rural with scattered settlements	9	20	24	20	27
Rural with highly dispersed settlements	15	5	11	36	33
Average	12	18	26	21	23

Notes: χ^2=641.4, *ddl*=24, *P*=0.001, Cramer's *V*=0.1.
Data source: Audience survey from SoFEST! research (*n*=26,002).

towns and rural villages. It is in these areas that attending a festival is most often described as a "get-together with friends" (52% in rural villages, 47% in small towns and scattered rural areas). Finally, going out as a couple is the most common way of attending festivals in the most fragmented areas, where social ties are weaker, and this is also likely due to the aging population living there.

4.2. Urban areas and festival creation dynamics: a logic of specialization

4.2.1. Festival creators' sociology

Interesting differences can be observed between regions. The paths to becoming a festival director vary from one region to another. In large urban centers, the creation of festivals is often a continuation of professional activities. In contrast, less densely populated areas, which also have fewer cultural facilities, are more likely to give rise to the chance development of an activity (professional or otherwise), sometimes very different from the original profession (Table 5). Neither an extension nor a conversion, this situation encompasses the majority of the backgrounds of volunteers (nearly 70%) among festival creators in rural areas. Even in isolated, rural, scattered, and highly dispersed areas, a search for a suitable space to organize a festival that draws on the knowledge, skills, and networks likely to ensure the festival's success. As a result, in these areas, this development logic makes festival creation an event that is more of an extension of existing professional activity. For example, there are twice as many intermittent workers (23% compared to an average of 11%) as in other areas.

These territorial differences also reflect a series of variations that nuance the overall sociological profile of festival directors. Large urban centers tend to favor creators who are young, highly educated, and from privileged

Table 4. Types of accompaniment by territory

Territory	With friends (%)	With family (%)	With a partner (%)	Alone (%)
Major urban centers	37	16	33	14
Intermediate urban centers	36	19	37	8
Small towns	40	14	34	12
Urban suburbs	36	23	34	7
Rural villages	29	17	39	15
Rural with scattered settlements	36	21	35	8
Rural with highly dispersed settlements	26	16	47	11
Average	36	18	35	11

Notes: χ^2=412.7, *ddl*=18, *P*=0.001, Cramer's *V*=0,071.
Data source: Audience survey from SoFEST! research (*n*=26,002).

Table 5. Career paths of creators by territory (%)

Territory	Continuation of former activity (%)	Carrer change (%)	No connection with former activity (%)
Major urban centers	69	6	25
Intermediate urban centers	63	10	27
Small towns	50	1	49
Urban suburbs	53	5	42
Rural villages	44	5	51
Rural with scattered settlements	63	6	31
Rural with highly dispersed settlements	60	6	34
Average	59	6	35

Data source: CoFEST!/Center for Political and Social Studies of Southern Europe-French National Center for Scientific Research/Deps, Ministry of Culture, 2025.

backgrounds. In contrast, medium-sized urban centers and urban belts offer more opportunities for women from middle-class and working-class backgrounds. The profile of directors based in rural areas illustrates the pattern described above and is distinguished by a higher average age (Table 6).

The regional footprint, therefore, plays a definite role in the sociology of festival creators, but without producing profiles that are radically different from the average. On the other hand, it is the territorial configuration of a festival's location that allows us to understand the trajectories of those who decide to create a festival there. The choice of a territory, even if it is not necessarily part of a conscious approach, is based on specific skills, meaning that a festival is not created in a randomly chosen location.

4.2.2. Motivation of festival creators

Figure 3 illustrates the primary motivations cited by respondents to justify the creation of their festivals, based on their locations. Figure 1 presents the results for the entire sample. We can see a clear distinction between the five most frequently cited motivations and the four others, which were mentioned less often. Respondents highlighted five reasons: Two artistic reasons, promoting an artistic discipline (cited as the primary motivation by 27% of the sample) and allowing artists to perform (12%); and three territorial reasons, promoting the region through culture (23%), building social ties in the region (14%), and strengthening the cultural offering in the region (12%). Conversely, these reasons were rarely highlighted: promoting the economic development of the area (1%), enriching the cultural offering of a permanent venue (5%), requests from public authorities (5%), and the request of a private actor in the commercial sector (0.4%).

A comparison of the motivations cited according to the territory where the festivals are held (χ^2 = 123.5, df = 48, p<0.001) reveals three main findings. First, artistic motivations are more regularly cited by festivals emerging in urban areas. The promotion of an artistic discipline is cited as the primary source of motivation by 34% of festivals in large urban centers, compared with only 20% of festivals in small towns and 15% of festivals in rural areas with very scattered settlements. One way to interpret this result is to view it as a response to urban demand that is more attentive to artistic offerings, although our findings on audiences do not seem to confirm this (Table 3). A second approach is to analyze this result as a consequence of the structure of cultural offerings in urban areas. In urban areas, where cultural offerings are denser than in rural areas, the need to defend an artistic project appears to be a significant criterion when creating an event. Ultimately, this outcome can be attributed to the unique characteristics of urban cultural institutions and is linked to the division of social and cultural labor in large urban centers. Cultural institutions, including festivals, are characterized by a dual specialization: artistic, first of all, due to the high density of supply and demand; and social, secondly, focused more exclusively than elsewhere on the production of cultural goods due to the presence of other institutions focused on different aspects of social life.

This logic of specialization is less pronounced in rural areas. The second result of our analysis shows that 23% of festival creators or directors in rural areas with very dispersed settlements cite the desire to create social ties as the primary motivation for making their event. Statistical tests (paired t-tests) show that this justification is more frequently used in the last two categories of community density than in the other five. Once again, this result echoes the distinct characteristics of rural area audiences. Table 3 highlights not only the importance of the collective dimension associated with attending a festival in less densely populated areas but also the importance of trust

Table 6. Sociology of festival creators by territory

Territory	Female (%)	<50 years old (%)	60 years old and more (%)	High school (%)	Upper class (%)	Volunteer (%)
Major urban centers	37	40	30	86	78	36
Intermediate urban centers	44	31	44	80	75	47
Small towns	31	30	50	83	77	54
Urban suburbs	47	44	22	77	73	42
Rural villages	28	36	36	70	67	67
Rural with scattered settlements	40	32	49	77	80	62
Rural with highly dispersed settlements	34	41	25	71	60	63
Average	37	36	37	76	74	51

Data source: CoFEST!/Center for Political and Social Studies of Southern Europe-French National Center for Scientific Research/Deps, Ministry of Culture, 2025.



Figure 3. Motivations associated with the creation of festivals and local density. (A) Total sample. (B) Major urban centers. (C) Intermediate urban centers. (D) Small towns. (E) Urban suburbs. (F) Rural villages. (G) Rural with scattered settlements. (H) Rural with highly dispersed settlements. Note: The color chart represents the percentage of respondents who cited each category as their primary motivation for creating their festival. The height of the bars represents the average position of each category in the order of preference expressed by respondents. For example, in Figure 3A, the motivation "Promote the region through culture" scores 8.17 and is cited as the primary motivation by 23.4% of respondents in the entire sample. $N = 1,237$; festivals in major urban centers = 391; festivals in intermediate urban centers = 202; festivals in small towns = 110; festivals in urban suburbs = 68; festivals in rural villages = 224; festivals in rural areas with scattered settlements = 194; festivals in rural areas with highly dispersed settlements = 48. Image created by the authors.
Data source: CoFEST! 2023 survey

in the event. In a rural world marked by both intense social relations and restructuring phenomena, such as demographic decline or renewal,[38] festivals are affected by this social function, especially as places capable of fulfilling it become increasingly scarce.

Finally, the desire to promote the region is more often highlighted in less densely populated areas (31% of festivals in rural towns cite this as their primary motivation) as opposed to large urban centers (11%). It is as if this objective of promoting culture, long pursued by France's major cities,[39] has shifted to areas that are both invisible to the dynamics of urbanization and increasingly popular with urban populations.[40]

5. Discussion

Territorial disparities are a recurring topic of public debate[41] and can be understood in terms of several dimensions of economic and social life. Similar to the questions surrounding metropolitan areas, their dynamics, and their ability to offer residents better living conditions and access to services, one may ask whether the observation of festivals can serve to describe this dynamic. The issue of access to cultural offerings—and particularly to festivals—thus provides an intriguing subject for studying festivalization in light of territorial disparities and the diverse lifestyles that accompany them. From this perspective, the prism of festival audiences offers an interesting initial view, insofar as attending a festival, like many cultural practices, is a highly unequal practice marked by strong sociological characteristics that appear relatively immutable to date. Furthermore, as urban sociology has long shown, territorial analysis must guard against any essentialization of the territory's ability to stem these inequalities: spatial proximity does not necessarily eliminate social distances.[42]

Indeed, while the relationship between audiences and festivals differs from one territory to another, can one truly posit the existence of sociologically distinct urban and rural audiences? The evidence suggests otherwise. Several factors contradict this bipartite view of festival audiences (Table 2). In terms of the gender indicator, women are in the majority everywhere, whether at seasonal cultural events or venues; their presence is stronger in densely populated areas, and in the most isolated regions (dispersed and highly dispersed rural areas). Despite the sociodemographic structure of the territories, social determinants that predispose people to cultural practices remain strong. The feminization of cultural audiences, long observed at the national level,[43] is also evident in these data. Several other indicators confirm this trend. On the one hand, the level of educational attainment and the majority representation of higher education graduates, regardless of the type of territory. On the other hand, the distribution of socio-professional categories reveals a clear dominance of the upper classes, managers, and higher intellectual professions across all regions. It has been known for many years that these two indicators are the cornerstone of analyzing inequalities in access to culture.[44] One might therefore have imagined that, depending on the territory, these inequalities would be reduced or accentuated in relation to the characteristics of the resident population. Overall, this is not the case, except for intermediate urban centers and urban suburbs, where the middle and working classes appear to be better represented, and large urban centers, where the overrepresentation of younger people (under 35 years) is more substantial than in other areas.

Nevertheless, there is a clear territorial imprint on festival attendance. Indeed, the strength of the social determinants that influence festival attendance should not obscure the existence of a territorial dynamic, which is a more reliable explanation of the relationship that individuals have with cultural events—and potentially with cultural institutions in general—than the more subtle variations in their sociological profile. This specific relationship with the region provides a more detailed understanding of how a relationship with a festival, and therefore a spectator practice, is developed. Observation of how people accompany others to festivals illustrates this through contrasts in the sociability of festival attendance. These contrasts are linked to the sociodemographic configuration of the territories, including aging, gentrification, and urban relegation. However, it is probably the question of motivations that best reflects the complex social arrangements at play in each territory. It is in urban areas that we find both the strongest forms of indifference toward festivals and those who feel they are enjoying a more complete aesthetic and social experience. This result illustrates the ambiguity of the effects of spatial proximity. Within the same festival, this proximity does not eliminate the need for social distancing. However, it does indicate greater familiarity with the cultural offering. Conversely, in rural areas where cultural offerings are scarce, relationships based on trust, friendship, and celebration become stronger, serving as the primary motivation for festival audiences. The conclusion is therefore twofold. On the one hand, attendance at festivals is influenced by the socio-territorial context in which the festival takes place. But on the other hand, it also depends on social belonging, which governs access to culture, social behavior, and the way different groups respond to this situation. This is why, while it does not abolish social and symbolic boundaries, spatial proximity remains the primary condition for possible social rapprochement.

Table 7. Territorial configurations and festivalization (summary of research findings)

Territorial context	Audiences	Festival creators	Governance logics	Resulting configuration
Large urban centers	Better educated, aesthetes, some indifference	Younger, professionalized, artistic focus	Institutionalized, specialized	Configuration of artistic professionalization
Intermediate towns	Middle/working class, socializing	Mixed profiles, more women, mid-career	Mixed governance, semi-professional	Configuration of hybridization
Rural areas	Trust, loyalty, conviviality	Older, more volunteers, social ties	Informal, associative, local authorities	Configuration of social cohesion and territorial promotion

These findings are partly counterintuitive. The hypothesis of a democratization of audiences through the territorialization of festivals assumed that there were significant contrasts in audience identity. However, the differences lie more in their motivation and behavior when going out than in their sociological identity. These initial findings warrant further investigation through two types of research. On the one hand, it would be interesting to address these questions from a comparative perspective, given the heterogeneity of population distribution in terms of urbanization, particularly in Europe, and differences in connectedness to arts and culture across countries. A key issue is whether festivalization abolishes these differences or instead integrates them into its dynamic. On the other hand, the quantitative approach used here does not accurately reflect what motivates and fuels the festival experience. A qualitative approach would enable a more in-depth analysis of the content of this experience, particularly in terms of sociability, well-being, and personal enrichment.

The study of the trajectories and sociology of festival directors should also be discussed. Contrary to our findings regarding audiences, we note that differences are more pronounced in sociological identity than in action. The trajectories that lead to festival management are certainly somewhat different from one region to another, but the differences remain relatively limited. On the other hand, the differences are significant in terms of gender, age, and socio-professional category. In this regard, it is worth noting that the proportion of volunteer directors is significantly higher in rural areas than in urban areas. This distinction between regions in terms of professional identity is consistent with our findings on the motivations for creating a festival. Motivations closely tied to specialized and professional objectives are more prevalent in large cities compared to rural regions. Conversely, goals that are more broadly focused on territorial and social development are more common in rural areas. These results should be explored further in two ways. First, the quantitative approach we have used here should be combined with a qualitative approach. The analysis of trajectories and motivations typically occurs within complex territorial configurations. In these contexts, the links between people, partnerships with local authorities, and networks of collusion with artists play a role that cannot be measured using a statistical approach alone. Second, the national framework is another limitation of this study. The study would benefit from an international comparison to identify what most closely links festivals, whether their discipline, their spatial location, or the sociology of their leaders. These remain open questions for further research.

This analysis reveals that the motivations associated with the creation of festivals partially overlap with the dimensions commonly identified in the literature as characteristic of the festivalization of culture. However, it also appears that these motivations are correlated with the territorial variable and are part of specific social contexts that can be highlighted by analyzing festival audiences. The comparison of the results of the CoFEST! survey and the cartographic analysis also raise questions about the transformations of the phenomenon of festivalization, taking into account not only its global trend but also its territorial contingency. Table 7 summarizes our observations and the impact of territorial configurations on festivalization.

These initial findings should be explored in greater depth, particularly by comparing the dynamics of festival creation and their territorial aspects with the more sociological dimensions of the profiles and trajectories of creators.

6. Conclusion

Our findings demonstrate a significant influence of territories on festivals, even if this influence does not always manifest in the ways we might expect. While the sociology of audiences varies little from one territory to another, behaviors and motivations are more contrasting between urban and rural areas. The sociology of festival leaders and the study of motivations for creating festivals reveal even more marked differences between these two broad types of spaces. These results lend meaning to the concept of festivalization that was not previously apparent. Although this phenomenon is often analyzed in its entirety, the coherence in the literature demonstrates a particular

territorial contingency. The process of festivalization advances through the specific constraints and resources of territories, and it is experiencing considerable development. Beyond this general observation, our results demonstrate the utility of approaching festivals as configurations, in Elias's sense of networks of interdependencies that link creators, publics, and governance structures within their respective territories. The territorial variable allows us to identify differentiated configurations: in metropolitan contexts, festivals are primarily shaped by logics of artistic specialization and professionalization, while in rural or semi-rural contexts, they are more closely associated with social cohesion and territorial promotion. This meso-level reading helps to move away from binary visions of festivalization (urban versus rural, professional versus amateur) by highlighting more nuanced arrangements between actors, audiences, and territories.

Simultaneously, the study underlines the limits of quantitative approaches. While statistical data have allowed us to identify significant regularities in audience sociology and festival governance, they cannot fully account for the meanings that individuals attach to their practices or for the micro-dynamics of collaboration between creators, local authorities, and communities. Future research should therefore combine large-scale surveys with qualitative approaches that can capture the lived experience of festival participation, the symbolic uses of territory, and the negotiations between stakeholders. Comparative international studies would also enrich the analysis by testing whether the territorial configurations identified here are specific to the French case or whether they resonate with broader European and global trends.

Finally, these findings invite a reconsideration of cultural policy. The persistence of social inequalities in cultural participation suggests that festivalization does not automatically democratize audiences. Yet, the territorial variations we observe highlight that festivals can still play a decisive role in fostering social ties, sustaining local identities, and diversifying governance models—provided that policies acknowledge and support this territorial embeddedness. Encouraging more flexible, place-sensitive forms of cultural policy would allow festivals to remain not only vehicles for artistic dissemination but also laboratories of social and territorial innovation.

Acknowledgments

None.

Funding

None.

Conflict of interest

The authors declare they have no competing interests.

Author contributions

Conceptualization: Julien Audemard, Emmanuel Négrier
Formal analysis: All authors
Investigation: All authors
Methodology: Julien Audemard, Emmanuel Négrier
Writing–original draft: Emmanuel Négrier
Writing–review & editing: Julien Audemard, Aurélien Djakouane

Ethics approval and consent to participate

This study was reviewed and approved by the Institution Review Board of the University of Montpellier. All participants were informed of their rights and gave consent to provide personal information.

Consent for publication

All participants gave consent for publication of any data, images, or information used in this study.

Availability of data

Data used in this work is available from the corresponding author upon reasonable request.

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Appendix

Methodological note: Building motivation profiles

The typology of motivations presented in Table 3 was developed using Principal Component Analysis based on a Likert variable constructed from a question about motivations for attending the festival. Each profile is constructed from a statistically significant and recurring aggregation of the different motivations given by respondents. Thus, the "All-rounder" profile brings together individuals who overvalue all of the motivations proposed. At the opposite end of the spectrum, the "Indifferent" profile is characterized by an undervaluation of all of the motivations proposed. These profiles are composed as follows:

Seven motivation profiles (score/20)

Table A1. Indicators of audiences' profiles

Motivations	Indifferent	All rounders	Friends and party	Aesthetes	Confidents	Average
Artists or artwork	13*	17**	12*	18**	18**	17
Programming confidence	4*	17**	11*	14	17**	14
Festival atmosphere	5*	19**	15**	9*	16**	14
discover new artists	5*	17**	12*	10*	15**	13
Friends, parents	12*	17**	17**	5*	9*	13
Festival renown	3*	18**	10*	11*	16**	13
Festival site, monument	5*	16**	10*	10*	14**	12
Partying	6*	18**	15**	4*	9*	11
Proximity to home	6*	14**	10*	7*	10	10
Medias	1*	11**	4*	2*	5**	5
Social networks	1*	12**	5	1*	4*	5

Notes: *The corresponding average is significantly lower from the average of the variable (5% risk); **The corresponding average is significantly higher from the average of the variable (5% risk). Data source: Audience survey from SoFEST! research (*n*=26,002).

ACCSCIENCE PUBLISHING

Arts & Communication

ARTICLE

Fragmented geographies for the 2023 European Capital of Smart Tourism: Seville City Office's film itineraries

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(This article belongs to the *Special Issue: Shaping Destinations: The Role of Cultural Affinity and Screen Tourism in Sustainable Development*)

Abstract

In the aftermath of the unprecedented surge in screen tourism, numerous European cities have developed initiatives offering visitors alternative ways to explore urban environments. This article examines the evolution of cultural tourism after the COVID-19 pandemic and focuses on the growing offer of film itineraries in Spain's main urban destinations. To this end, it analyzes the potential of the film itineraries proposed by the Seville City Office to decentralize visitor flows, extending new narratives of heritage discovery to other parts of the city. Thus, this work explores, on the one hand, the key characteristics of the locations and neighborhoods suggested by the selected films and, on the other hand, the success of the films in terms of audience, as well as the awards they have won and the confirmation of the itineraries according to a "cine-mapping" strategy. An analytical-descriptive investigation is presented using the technique of scientific observation, studying the locations and cinematic reception with a clear and precise objective. Combining the analysis of tourism in the city of Seville with the results obtained, it can be seen that these itineraries, although proposed by an entity whose objective is tourism governance, appear to lack local consensus and show limited alignment with the city's tourist dynamic—an aspect which limits their acceptance by both residents and tourists—despite being part of a cine-mapping strategy.

Keywords: Cultural tourism; Sevilla; Movie tourism; Sustainable tourism; Cine-mapping; Destination marketing and management organizations

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Citation: Puche-Ruiz MC. Fragmented geographies for the 2023 European Capital of Smart Tourism: Seville City Office's film itineraries. *Arts & Communication*. 2026;4(1):025310071. doi: 10.36922/AC025310071

Received: July 31, 2025

1st revised: September 3, 2025

2nd revised: September 10, 2025

Accepted: September 11, 2025

Published online: October 27, 2025

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1. Introduction

According to the Smart Tourism Office (a division of the Seville City Office), Seville city received over 3.6 million tourists in 2024, marking a 2.53% increase compared to the previous year.[1] In addition to the post-COVID-19 recovery, a balanced relationship between national and international visitors is evident, though international markets are exhibiting a higher proportion of overnight stays compared to domestic demand. Seville has established a potent identitarian image in music and in literature, partially due to its historical role as a pivotal port of the Americas, as depicted in over 150 operas. The site where trade with the Americas was formerly overseen is now the Archive of the Indies,

a United Nations Educational, Scientific, and Cultural Organization World Heritage site. The city's renown also stems from the fascination of romantic travelers for a mythical Andalusia, a concept perhaps derived from their imagination, populated by ruins and monuments of Hispano–Arab architecture. Cinema emerged as the primary medium for disseminating Andalusian myths during the 20th century, although encumbered by stereotypes and archetypes. This phenomenon is evident in the travelogues of the Lumière brothers and Alice Guy, as well as the contemporary iteration of *Blood and Sand* (1989). In addition, Andalusia was often portrayed as the embodiment of Spanishness during the Franco era, further contributing to its stereotypical representation.

It is important to acknowledge that the concept of providing film itineraries by Seville's managers originates from Seville's candidacy and subsequent designation as the 2023 European Capital of Smart Tourism. To elaborate further, the aforementioned entity is the Sevilla Film and Events section of the Seville City Office, responsible for the promotion of "media, events, and entertainment." Therefore, with the assistance of location scouts Nieves González and Lucía Escassi, four Seville Film Itineraries were formulated and developed through Google My Maps (Google, United States), providing links through the official website (https://sevillafilmandevents.com/), and exclusively available in Spanish.

These itineraries have recently been linked to the "*Andalucía destino de cine*" website, a broader online initiative that includes locations throughout Andalusia. The first itinerary, entitled "The Seville that tells us about history," focuses on historical productions filmed in the city during the past two decades. The second itinerary, "The Seville of the 2000s," concentrates on films shot at the beginning of the 21st century. The third and fourth itineraries, entitled "Neighborhood portraits" and "The most recent Seville," respectively, propose films shot in economically disadvantaged or marginalized neighborhoods, as well as the latest film productions shot in the city. The Seville City Office has not yet furnished data regarding the outcomes of the itineraries, nor have they undergone analysis in terms of their potential to decentralize tourist flows from the most saturated neighborhoods, thereby diverting cultural tourists to other areas such as Triana, Los Remedios, and Nervión.

This paper examines the evolution of cultural tourism in the aftermath of the COVID-19 pandemic and analyzes the increasing proliferation of film itineraries in Spain's prominent urban destinations. To this end, it focuses on the city of Seville (Spain), whose primary tourism-related challenge stems from the high volume of visitors in its historic center (particularly evident in the Santa Cruz quarter; Figure 1). This phenomenon is replicated in other major European cities. This endeavor aims to diverge from what Klein characterizes as enclosed and "scripted spaces"[2] (i.e., the city center) and to expand new narratives of heritage discovery to encompass other areas of the city.[3]

This work aims to explore the tourist potential of these itineraries through scientific observation,[4] by examining specific operational criteria. A comprehensive analysis was conducted on each itinerary, encompassing the following indicators: the location theming, the accessibility of these itineraries to tourists, the reception of the films that integrate the itineraries as determined by audience size and critical acclaim, and their alignment with the five principles of "cine-mapping."[5]

A synthesis of the analysis of tourism in the city of Seville, alongside the results obtained, revealed that these itineraries, despite being proposed by an entity with objectives of tourism governance and sustainable tourist flow distribution in the city, have been designed without obtaining local consensus. This suggests a disregard for the tourist reality of the city (dominated by an average cultural tourist who is not particularly well acquainted with films shot in Seville), limiting their acceptance by both residents and tourists, despite being part of a cine-mapping strategy. The work is divided into three sections, with the objective of determining the appeal of the spaces and films suggested by the itineraries to tourists and their alignment with the five successful principles proposed by Burke *et al.*[5] The initial section offers a concise overview of Seville's tourism landscape. The second part of the study presents some of the most salient results, and the third part provides some points of debate and the main conclusion.

2. Cultural tourism and film tours: The case of Seville

In the aftermath of the unprecedented surge in tourism that ensued following the release of *The Lord of the Rings*,[6] numerous European cities, recognizing the efficacy of urban tourism models such as those in London or Barcelona,[7] have devised and implemented initiatives to offer visitors alternative ways to explore the metropolises. These initiatives, showcased on their official tourist websites, are designed to complement the conventional tourist experience, appealing to the niche market of cultural tourists. A significant proportion of these itineraries is derived from successful products that embody the distinct characteristics of the destination.[4]

Collaborations between film commissions and Destination Management Organizations are prevalent,[8] though they occur with intermittent frequency[9,10] and

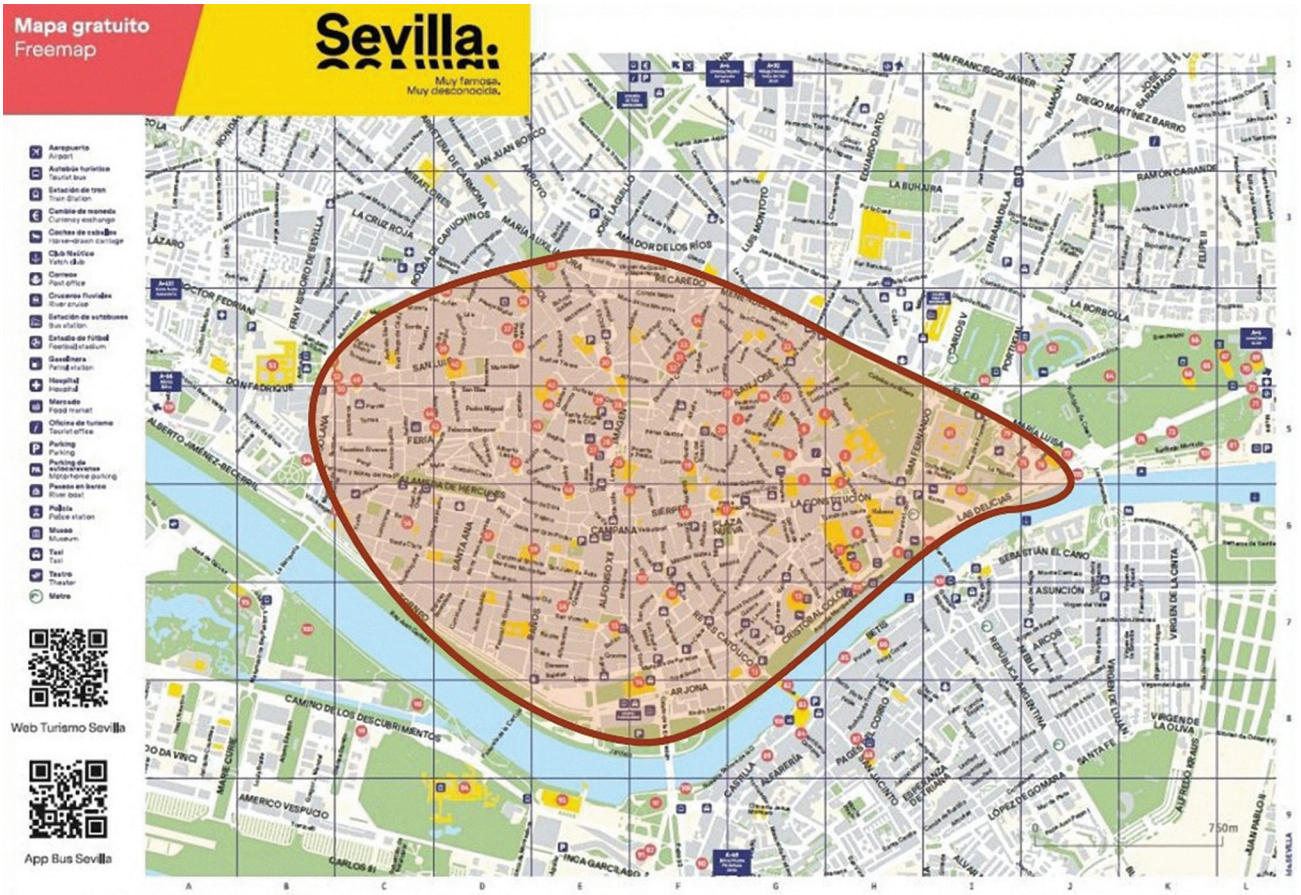


Figure 1. Official map of the Seville City Office, highlighting the neighborhoods of the historic center
Source: Map by the Seville City Office, highlighted by the author.

are limited to the immediate impact of audiovisual products.[11-18] These issues are further exacerbated by the considerable difficulty in discerning the film-related motivation of visitors,[19] particularly in prominent cultural metropolises with a very distinctive cultural image. This notion has been reinforced by a considerable number of academic studies.[20] For all these reasons, cases of true and sustained success are often rare.

A particular focus should be placed on visits to specialized theme parks or specific attractions. These attractions have the capacity to meticulously recreate the most evocative elements for what has been termed "cinematic pilgrims"[21] or to serve as a framework for relevant scenes.[22] In addition, heritage cities, such as Edinburgh,[23] have developed increasingly sophisticated strategies based on artificial intelligence.[24] The sense of global mobility and belonging to the world is explained by the "tourist imagination"[25] generated through the consumption of audiovisual and travel narratives about "scripted spaces"[26] around the world. Many authors have noted the similarities between the cultural constructs of tourism and cinema, which are both dominated by the effects of imagination and the emotions they evoke, as well as our sense of belonging to places and their understanding.[27,28] In this vein, Burke *et al.*[5(p39)] have introduced a new theoretical framework, cine-mapping, regarding "[…] the ways that fictional screen narratives are used to develop scripted spaces that structure a consumer's engagement with a real-world location."

Burke *et al.*[5] identified the differences and similarities between theme parks and cine-mapping strategies. Theme parks are enclosed spaces that aim to establish their own narrative away from the real world. In contrast, the object of a cine-mapping is the real territory/city, which remains physically unchanged but is reinterpreted or endowed with new meanings. It is posited that this framework is optimally suited to serialized screen stories. A thorough analysis of three successful cine-mapping initiatives was presented, including the *Hobbiton Movie Set* in New Zealand, *Star Wars* franchise tourism in Tunisia, and the *Game of Thrones Territory* in Northern Ireland. The analysis culminated in the delineation of five main characteristics:

(i). These initiatives are designed and overseen by stakeholders, who adeptly balance the divergent interests of various groups and cultivate their collaborative efforts.
(ii). They target a broad audience, rather than only passionate fans, ensuring sustainability.
(iii). They should rewrite narratives about real places in a compelling, mainstream manner aligned with the "experience economy" of staged mass tourism,[29] offering immersive, themed experiences that appeal even to casual fans and uninformed visitors.
(iv). They should reduce the gap between reality and fiction by developing a "mental map of narrativized screen space" through transmedia storytelling (digital movie maps and apps to spread narrative-based strategies[30,31]) to emotionally engage tourists.
(v). These experiences aim for long-term impact, offering economically viable and commercially sustainable branded tourist products, often based on serialized products.

In addition to being mostly grounded in serialized film products, it is crucial to acknowledge that the case studies analyzed by these authors were implemented in substitute locations. For example, New Zealand offered a suitable location for Hobbiton, while the Tunisian region of Tataouine was selected to represent Tatooine. Furthermore, Northern Ireland stood as the chosen location for the portrayal of Winterfell. The city of Seville faces an additional challenge: the complications that arise when its history and heritage are reframed through its transformation into a fictional location in a blockbuster film.[32-36]

Marchena Gómez[37(p366])] acknowledged that, during the late 1980s and early 1990s, "[...] there was an incorporation or intensification of new inland areas [into the tourist activity]," such as "Granada, Seville, Cordoba: the triangle of the Andalusian Circuit [...]." The author recalled that "[...] in the 1980s there [was] a more selective growth in Andalusia [than in the rest of Spain] and, moreover, higher than the national average (26.6% over the 15.5% of Spain)"[37(p354])] and that "[t]his effect [was] supported by the complexity of the Andalusian offer (urban, route, niche tourism) and the pull of events such as Expo'92."[37(p354])] Subsequently, a diversification of promotional strategies for tourism in Andalusia emerged. Therefore, a "conscious effort made to renew and overcome the traditional image of our region [can be perceived]; an effort carried out, however, in a gradual and transitional way, so as not to squander the unquestionable capacity for penetration and iconic power of the most recognizable features of the traditional image."[38(p258])]

For Marchena,[37(p368])] the Andalusian lifestyle "[...] is understood as a diffuse image of a certain quality of life, a particular urbanism, an attractive lifestyle, a seductive culture, a welcoming and diverse landscape, still imbued with a certain aura of origin in the romantic journey, characteristics that are not comparable to those of the industrialized regions of the territories of origin." This image is adapted to the patterns of experiential tourism, becoming increasingly standardized as the 21st century progressed in response to the new tourist demand. In this sense, it is worth highlighting the influence that the boom in urban cultural tourism has had on Spanish cities at the beginning of the 21st century, largely due to the growth of low-cost transportation and online accommodation platforms.[39]

At a time when the touristification of the city of Seville was becoming apparent, the shutdown caused by the COVID-19 pandemic would be the prelude to the massification that would accompany the total democratization of the urban phenomenon, forcing destinations to re-imagine themselves and consider screen tourism as a way to develop a new tourist offer. The municipality of Seville had been left without an organization to bring together and distribute film shoots in the city[40]—an impasse that the City Council took advantage of to establish the Seville City Office (a destination marketing & management organization [DMMO], 2022–2023) and promote its candidacy as "2023 European Capital of Smart Tourism." The municipal Office in question comprised a Smart Tourism Office and a Film Office (Sevilla & Me, now Sevilla Film and events) with the objective of fostering new cultural industries. In 2023, Sevilla & Me initiated the implementation of four film itineraries, which were predicated on a multitude of films rather than on an iconic cinematic product. The itineraries prioritized the promotion of Seville as a city of fragmented geographies. An exploration of their potential to boost sustainable tourism in the city is therefore warranted.

3. Results

3.1. Itinerary 1 "The Seville that tells us about history"

According to the Seville City Office, the first itinerary encompasses places located in the intramural part of the city. The corpus includes historical productions, such as *Carmen* and *Alatriste* (Figure 2), as well as productions that are linked to Spain's recent past, including *Grupo 7*, *La Isla Mínima*, and *Modelo 77*. Therefore, the initial two are concentrated in the Casco Antiguo district, while the remaining are situated in the Nervión, Los Remedios, or Bellavista neighborhoods.

Carmen (Vicente Aranda, 2003), the most recent Spanish adaptation of the 19th century's mythical narrative



Figure 2. Posters of films in Itinerary 1, "The Seville that tells us about history"
Source: Modified from IMDb's images.

conceived by Mérimée, is regarded as the most faithful reinterpretation of the original character of the female cigar maker (embodied by Spanish actress Paz Vega). This film was shot almost entirely on location in Córdoba and Seville. It successfully recreates the Andalusian atmosphere in such emblematic places as the Real Fábrica de Tabacos (the Tobacco Factory, where it is supposed that Carmen is working when she encounters Navarre lieutenant José de Lizarrabengoa) or Santa Cruz quarter (the ancient Jewish quarter, re-invented at the beginning of the 20th century as an iconic Andalusian architectural model by the Royal Commissioner of Tourism, Benigno de la Vega-Inclán). These places are indicated in red in Figure 3.

Conversely, *Alatriste* (Agustín Díaz Yanes, 2006) is an adaptation of a part of the literary saga *Adventures of Captain Alatriste* by Arturo Pérez-Reverte. While Úbeda and Baeza (World Heritage cities located in the province of Jaén) were used to reproduce 17th-century Imperial Madrid, the only location selected in Seville was the Real Casa de la Moneda (the Royal Mint), which is part of the buildings within the old walls of the Alcazar. Despite the fact that the site was nearly in a state of disrepair during the filming of Alatriste, the original courtyard has since undergone a comprehensive restoration, metamorphosing into a popular attraction for tourists and residents, with the addition of tourist accommodations. However, there



Film	Locations	Neighborhoods
Carmen **(Vicente Aranda, 2003)**	Patio de Banderas, Calle Judería, Fábrica de Tabacos, Iglesia de San Luis de los Franceses	**Santa Cruz, Feria**
Alatriste **(Agustín Díaz Yanes, 2006)**	Real Casa de la Moneda	**El Arenal**
Grupo 7 **(Alberto Rodríguez, 2012)**	Casa del Pumarejo, Calle Mendoza Ríos (zona Puerta Real), Calle Verde, Calle Niebla (Escuela Politécnica Superior), Avda. Blas Infante (edificio UGT y Policía), Calle Boteros (Bar Garlochí), Barriada de Guadaira, Calle Eduardo Dato (Real Fábrica de Artillería), Calle San Luis, Ayuntamiento	**San Gil, Museo, Santa Cruz, Los Remedios, Alfalfa, El Tardón, Los Bermejales, San Bernardo**
La Isla Mínima **(Alberto Rodríguez, 2014)**	Calle Jiménez Aranda (interior casas)	**San Bernardo**
Modelo 77 **(Alberto Rodríguez, 2022)**	Antigua Fábrica de Tabacos Altadis, Plaza de España. Complejo Educativo Blanco White y antiguo Instituto de la Grasa, Calle Eduardo Dato (Fábrica Santa Bárbara)	**Los Remedios, Bellavista, San Bernardo**

Figure 3. Locations and neighborhoods of films in Itinerary 1
Note: Data from Sevilla Film and Events.

is no evidence of this filming in the densely congested premises.

Itinerary 1, in this sense, integrates iconic locations, such as Calle Judería (*Carmen*, 2003) and the Artillery Factory, with lesser-known places such as Calle Mendoza Ríos (*Grupo 7*, 2006), Calle Jiménez Aranda (*La Isla Mínima*, 2014), and even the interior of an abandoned office in the popular Plaza de España (*Modelo 77*, 2022). It is noteworthy that the latter three productions are directed by Alberto Rodríguez, who is widely regarded as the preeminent proponent of new Andalusian cinema. These films were set in the complexities of the Spanish criminal world during the late 1970s and 1980s. The filmmaker sought locations capable of effectively conveying the ochre and almost ugly atmosphere of Sevilla (and Barcelona, in *Modelo 77*), where the pursuit of murderers of teenagers, drug traffickers, and delinquents convicted of economic crimes was underway. Consequently, the preponderance of these unidentified locations is concentrated in less densely visited neighborhoods, such as Los Remedios, San Bernardo (illustrated in yellow; Figure 3), and El Tardón (in green). It is also important to note that the UGT Headquarters building was utilized as a police station in *Grupo 7* (2012).

Regarding their reception, Figure 4 indicates that all the films were commercially successful, with the exception of *Grupo 7* (2012) and *Modelo 77* (2022)—both are considered non-mainstream productions. However, an examination of the data revealed a discrepancy. The highest-grossing and most awarded film, *La Isla Mínima*, has not located its emblematic spaces in the city of Seville. It is imperative to acknowledge that the film's narrative is situated exclusively within the marshes of the Guadalquivir, thereby rendering its depiction of Seville contingent on the impersonation of other geographical locations downstream. Consequently, the reinterpretation of the urban landscape becomes a complex matter. *Carmen* and *Alatriste*, both of which enjoyed widespread popularity among the general public, did not receive a favorable reception from critics, particularly the latter, which is often deemed an ineffective adaptation of the novels from the saga.

With regard to the five principles of cine-mapping proposed by Burke *et al.*,[5] this itinerary complies with all of them except principle 4 (although none of the selected films are part of a film saga, which would contribute to the permanence of the itineraries). In this sense, the itinerary has been developed by two public–private partners, the Seville City Office and the location scouts. The selected films

Film	Audience	Awards
Carmen **(Vicente Aranda, 2003)**	1,381,108	**1 Goya Award** 7 Nominations
Alatriste **(Agustín Díaz Yanes, 2006)**	3,182,656	**3 Goya Awards** 15 Nominations
Grupo 7 **(Alberto Iglesias, 2012)**	379,430	**2 Goya Awards** 16 Nominations
La Isla Mínima **(Alberto Iglesias, 2014)**	1,291,487	**10 Goya Awards** 17 Nominations
Modelo 77 **(Alberto Iglesias, 2022)**	353,997	**5 Goya Awards** 16 Nominations

Figure 4. Reception and awards of the movies in Itinerary 1
Note: Data from Catálogo de Cine Español ICAA.

are intended to appeal to a broad audience, incorporating popular characters and myths, as well as renowned filmmakers. The majority of these films have exerted a significant and long-lasting influence on audience size and popularity in Spain. Furthermore, a movie map has been developed to attract potential tourists (integrated in Google My Maps). Nonetheless, Itinerary 1 does not constitute an experience that can be considered immersive, as it does not meet the criteria for being a tour. Although this itinerary highlights some lesser-known neighborhoods, the proposed landmarks are geographically disparate, with no evident temporal or spatial correlation, and some are inaccessible to the public. Therefore, even though tourists are provided with a My Maps that includes the proposed locations, it is extremely difficult to construct a mental map that integrates them all, resulting in a fragmented and dislocated geography of the city of Seville. The absence of a unifying theme or coherent narrative further exacerbates the disorientation experienced by visitors. One might reasonably ask: is the focus of the itinerary the history of Seville, or is it the history of Spain?

3.2. Itinerary 2 "The Seville of the 2000s"

A thorough examination of the second itinerary revealed its emphasis on "places that are not immediately identifiable as being part of the city, […] those non-places, those landscapes that are difficult to recognize for those who are unfamiliar with the destination."[41] Accordingly, the films under consideration are predominantly set in other cities (*Cabeza de perro*; Figure 5), in other indoors (*Crimen Ferpecto*), in dystopias and alternative realities (*Nadie conoce a nadie* and *Tres Días*), or as sensitive generational portraits (*Solas*, *Astronauts*, and *After*). It is evident that the proposed spaces are gradually migrating to less-visited neighborhoods, such as Triana Oeste, Torneo, El Cerro del Águila, and Rochelambert, marking a shift from well-known locations like the Plaza del Salvador to spaces with legacies of the Expo'92 event (Pasarela de la Cartuja) or those that have since disappeared or been relocated, including the Pavilion of the Holy See (*Nadie conoce a nadie*), the Vilima Department Store (*Crimen ferpecto*), and the Elefunk Bar (*After*).

Solas (1999) marked the critically lauded debut of Andalusian filmmaker Benito Zambrano. The film chronicles the journey of a mother (María Galiana), who, upon the hospitalization of her spouse, seeks temporary respite in the modest residence of her daughter (Ana Fernández) in Seville. The daughter, a semi-alcoholic, is insecure about her job and relationships. She welcomes her mother, and then she starts to like her. Concurrently, the elderly woman has cultivated a distinctive relationship with a solitary neighbor, which is subsequently disrupted when her husband is compelled to return to the countryside. The film is mostly indoors, heightening the intimacy, but a few locations place the viewer in the San Bernardo neighborhood, an eminently working-class area (shown in yellow; Figure 6).

Nadie conoce a nadie (1999) was another acclaimed debut by screenwriter Mateo Gil. The film addresses the prevalent stereotypes associated with Seville's Holy Week, interweaving a narrative centered on terrorism, role-playing games, and sects. The filmmaker sought out iconic locations, such as the Salvador Church or the Calle Judería in the Santa Cruz quarter (shown in red; Figure 6), as well as abandoned infrastructure from the 1992 World's Fair (highlighted in green).

In the case of *Astronauts*, a 2004 film directed by Santi Amodeo, the viewer encounters an unlikely couple also



Map 2. The Seville of the 2000s

Figure 5. Posters of the films in Itinerary 2, "The Seville of the 2000s"
Source: Modified from IMDb's images.

united by a shared sense of loneliness. Daniel (Nancho Novo) is a middle-aged man attempting to adapt to a normal life after overcoming his drug addiction. Meanwhile, Laura (Teresa Hurtado) travels to Seville in search of her brother, who was Daniel's neighbor. The two characters reach an agreement to assist one another, prompting Laura to accompany Daniel in living a normal life by traversing the streets of Seville, purchasing records, and visiting friends. The film's primary setting is located in the central streets of Alfalfa or San Marcos neighborhoods (shown in red; Figure 6), in addition to the Nervión shopping center (outlined in yellow).

As previously mentioned, the remaining films present various issues related to the tourist visit and the identification of the locations. *Crimen ferpecto* (a black comedy by Álex de la Iglesia) was filmed in 2004 in a department store in the central neighborhood of La Alfalfa (shown in red; Figure 6) that had been closed for many years. This location has transformed, becoming a luxurious boutique hotel under the ownership of the Barcelona-based H10 chain. The stores that served as the setting for Álex de la Iglesia's film have been eliminated, a consequence of the process of tourist gentrification. Meanwhile, *Cabeza de perro*, a film directed by Santi Amodeo in 2009, offers a highly partial view of the city of Seville, as the majority of its filming took place in Madrid. However, the film returns to depicting densely visited neighborhoods within the city center. Notably, Cabeza de Perro holds the distinction of being the first film to be shot in the crypt of the Church of San Luis de los Franceses before its significant restoration (shown in red, Figure 6).

As for *After*, directed by the accomplished Alberto Rodríguez in 2009, it chronicles the reunion of three former teenage companions who embark on an evening of revelry in an attempt to erase their past and confront their present-day ghosts. The film combines locations that have since disappeared—the well-known Bar Elefunk, located in the densely visited Arenal neighborhood (shown in red; Figure 6)—with lesser-known locations in the Los Remedios neighborhood (shown in yellow; Figure 6). On the other hand, *Tres días*, directed by F. Javier Gutiérrez and filmed in the vicinity of the Hytasa Thermal Power Plant situated in the El Cerro del Águila neighborhood (shown in green; Figure 6), portrays a dystopian future in which



Film	Locations	Neighborhoods
Tres días **(F. Javier Gutiérrez, 2008)**	Calle Raso (Central Térmica de Hytasa)	El Cerro del Águila
After **(Alberto Rodríguez, 2009)**	Pasarela de la Cartuja, Calles Padre Damián y Fernando IV, Calle Adriano (antiguo Bar Elefunk), Hotel Exe Sevilla Macarena (piscina)	Triana Oeste, Los Remedios, El Arenal, Parlamento-Torneo
Astronautas **(Santi Amodeo, 2004)**	Centros Sociales de Miraflores, Nervión Plaza, Calle Amor de Dios (tienda de discos de referencia), recorrido Alameda de Hércules-San Marcos-Eduardo Dato, Calle Imagen (soportales), Calle Lira (edificio abandonado), Calle Virgen del Valle (Curro Silver Barber)	Miraflores, Nervión, Alfalfa, San Marcos, San Julián, Los Remedios
Cabeza de perro **(Santi Amodeo, 2009)**	Estación de Autobuses del Prado de San Sebastián, Calles Goles y Baños (antiguo garaje), cripta de la Iglesia de San Luis de los Franceses, Centro Comercial Ronda del Tamarguillo	El Prado-Parque de María Luisa*, San Vicente, Feria, Rochelambert
Crimen ferpecto **(Álex de la Iglesia, 2004)**	Grandes almacenes Vilima (hoy H10 Casa de la Plata)	Alfalfa
Nadie conoce a nadie **(Mateo Gil, 1999)**	Iglesia y Plaza de El Salvador, antiguo mirador panorámico Expo'92 de la Cartuja, Pabellón de la Santa Sede de la Expo'92 (derribado en 2017), Calle Judería	Alfalfa, Triana Oeste, Santa Cruz
Solas **(Benito Zambrano, 1999)**	Bar Calle Demetrio de los Ríos y Puente de los Bomberos, Pabellón de España Expo'92, antiguo Hospital Militar Vigil de Quiñones	Triana Oeste, San Bernardo, Los Bermejales

Figure 6. Locations and neighborhoods of the films in Itinerary 2
Note: Data from Sevilla Film and Events.

the Earth (and, more specifically, the fictional town of La Laguna) is set to be destroyed by the impact of a meteorite.

With respect to the reception of the films included in Itinerary 2 (Figure 7), some films went unnoticed at the box office (primarily *Tres días*, *After,* and *Astronauts*), while some were great hits (e.g., *Solas*, *Nadie conoce a nadie*, and *Crimen ferpecto*). However, when the two variables of audience and awards are considered together, it becomes evident that the most successful films were either quite distant in time (*Nadie conoce a nadie* and *Solas*) or primarily shot indoors (*Crimen ferpecto*). In addition, *Cabeza de perro*, which received a strong reception from the public and earned a resounding nomination for the young actress Adriana Ugarte, takes place primarily in the Spanish capital.

With respect to the five principles of cine-mapping,[5] Itinerary 2 adheres exclusively to principle 1 and partially to principle 4. In this sense, the itinerary has been developed by two public–private partners (Seville City Office and the location scouts), and a movie map has been constructed to attract potential tourists. However, the selected films are not intended for a general audience—they are not part of a film saga and most have not had a long-lasting impact in terms of audience or popularity in Spain (with the notable exception of *Solas*). Consequently, they cannot engage tourists in an immersive way, since they include missing locations.

As with the first itinerary, Itinerary 2 cannot be regarded as a sightseeing tour, given the considerable distances between the proposed locations (shifting between traditional locations and lesser-known neighborhoods), precluding the development of a mental map. Despite the provision of a My Maps to tourists, the displacements experienced by these individuals are significant. The thematic elements of this case appear to be consistent, although with the primary objective of appealing to local tourists who have experienced Seville in the 2000s. This observation underscores the itinerary's lack of consistency and its failure to appeal to tourists. It appears that Itinerary 2 is specifically designed for residents of Seville. It is evident that foreign tourists, constituting the predominant demographic of visitors to the city, are not inclined to be intrigued by such niche and independent proposals, often exhibiting a tone that is both bittersweet and darkly humorous. This is especially true for visitors who have not yet had the opportunity to acquaint themselves with the city's uniqueness during its recent transformation into the modern metropolis it is today, a process that occurred predominantly during the 2000s.

Film	Audience	Awards
Tres días **(F. Javier Gutiérrez, 2008)**	38,819	**1 Goya Award** 1 Nomination
After **(Alberto Rodríguez, 2009)**	68,606	3 Nominations
Astronautas **(Santi Amodeo, 2004)**	46,837	2 Nominations
Cabeza de perro **(Santi Amodeo, 2009)**	111,717	1 Nomination
Crimen ferpecto **(Álex de la Iglesia, 2004)**	860,710	6 Nominations
Nadie conoce a nadie **(Mateo Gil, 1999)**	1.410,323	**1 Goya Award** 2 Nominations
Solas **(Benito Zambrano, 1999)**	945,473	**5 Goya Awards** 11 Nominations

Figure 7. Reception and awards of the movies in Itinerary 2
Note: Data from Catálogo de Cine Español ICAA.

3.3. Itinerary 3 "Neighborhood portraits"

The third itinerary proposes "a lesser-known city, a city far from the monumental center where people live, where stories are told openly."[41] It consisted of films that were partially shot in Seville, such as *Anochece en la India* (Figure 8). Other films feature characters who oscillate between the center and the periphery, as exemplified by Paco León's popular diptych dedicated to his mother, *Carmina o revienta* and *Carmina y amén*. Meanwhile, some films, such as *7 vírgenes* and *Adiós*, were shot in marginal neighborhoods. Once again, the findings revealed that the selected spaces are being relocated to less densely visited areas, often situated in problematic neighborhoods, such as La Oliva and El Cerro del Águila. This practice involves the combination of conventional spaces, including notable landmarks like Puerta de Jerez, Calle San Fernando, and Hotel Alfonso XIII in the case of *Carmina y amén*, with neighborhoods characterized as degraded or marginal, such as the single-story houses of Amate or the Tres Mil in *Adiós*.

The diptych, proposed by the multifaceted artist Paco León and centered on the peculiar character of Carmina Barrios (his mother in real life), commences in the predominantly working-class neighborhoods of the city of Seville (Cerro del Águila and La Oliva; represented in green, Figure 9), before shifting in the second part—much more conventional than the original—to well-known areas of the historic center (Santa Cruz quarter and Museo neighborhood; shown in red, Figure 9). Accordingly, the first film (*Carmina o revienta*), whose title plays on the words of a legendary 1980s film about juvenile delinquents, portrays Carmina, a Sevillian woman in her 60s who, while striving at all costs to recover the hams stolen from her restaurant on the outskirts of Seville, confides to the viewer from her kitchen at home. In the second part, which had a larger budget, the protagonist traverses more conventional places while attempting to conceal her husband's death to collect the additional payment owed to her by the State and confronting her own illness.

Anochece en la India (Chema Rodríguez, 2014) depicts the final adventure of a former tour guide (played by actor Juan Diego) who, during the height of the hippy era, took tourists to India. The protagonist commences this twilight journey from a wheelchair, accompanied by his Romanian assistant. Given that the plot scarcely takes place in Spain, it is surprising that the Seville City Office chose this film for a cinematic itinerary, as only a few streets of the Amate neighborhood are shown (illustrated in green, Figure 9).

The two films that close this itinerary also present problems in terms of tourist visits, given that their locations are concentrated in working-class neighborhoods with little tourist appeal, or that are directly conflictive in the city (Polígono Sur; shown in green, Figure 9). *7 vírgenes* was the third feature film by director Alberto Rodríguez (who has been referenced extensively in this paper). The film's narrative follows a teenage character, Tano, portrayed by the young actor Juan José Ballesta, who, while residing in a reformatory, is granted a brief period of liberty in his Seville neighborhood to attend his brother's wedding. However, despite his attempts to maximize the potential of these hours (demonstrating a Seville that is far removed from clichés), he soon comes to recognize the transformation of his milieu, prompting a reevaluation of his fundamental convictions.



Figure 8. Posters of the films in Itinerary 3, "Neighborhood portraits"
Source: Modified from IMDb's images.

In the film *Adiós* (Paco Cabezas, 2019), the protagonist, Juan, a convict who has been recently granted parole after serving a prolonged prison sentence, decides to take the law into his own hands in an attempt to avenge the death of his daughter, Estrella. The narrative is presented in parallel with the official investigation underway in Las Tres Mil, a marginal neighborhood located within the Polígono Sur district (depicted in green, Figure 9). The investigation culminates with the exposure of a significant drug trafficking network. It is noteworthy that the production received nationwide publicity, underscoring the fact that it was filmed in a marginal neighborhood of Seville—one of the poorest areas in Spain—and had the "collaboration" and acquiescence of the residents.

With regard to audience and critical reception, the films under consideration have been successful commercially, with the exception of *Anochece en la India* (Figure 10). However, these films have not been distinguished with major awards—only *7 vírgenes* won a Goya Award for Best New Actor for Jesús Carroza, who plays the protagonist's friend in the film. *Carmina o revienta* achieved cult film status after its release. It incorporated a combination of theatrical, online, and DVD release formats, thereby complicating the assessment of its distribution (Figure 11 exclusively captures the number of viewers in theaters). Meanwhile, *Adiós* experienced a privileged premiere shortly before the onset of the COVID-19 pandemic.

With respect to the five principles of cine-mapping,[5] Itinerary 3 adheres to principle 1 and partially aligns with principle 4. However, the films incorporated within the map are not intended for a general audience and do not constitute serialized film products, with the exception of those featuring Carmina Barrios. The films' impact on Spanish audiences and their popularity in the country have been limited. However, the rise of Carmina Barrios can be seen as a notable viral phenomenon, particularly among the younger, internet-savvy audience. This itinerary is not designed to attract tourists in an immersive way, as it features controversial locations, raising concerns with regard to principle 4. As with the itineraries previously



Film	Locations	Neighborhoods
7 Vírgenes **(Alberto Rodríguez, 2005)**	Vías del tren (Polígono Calonge), Parque Atlántico (Carretera Carmona, Avenida Las Asociaciones de Vecinos), Calle Dr. Laffón Soto, calle Eduardo García Maroto y alrededores (Polígono San Pablo), Centro Comercial Ronda del Tamarguillo	La Rosaleda, Polígono San Pablo, Cerro del Águila
Adiós **(Paco Cabezas, 2019**	Calle Pegaso, Calle Lebreles, Calle Ave del Paraíso, Calle Hidra, Real Fábrica de Artillería, antigua base americana (base militar aérea de San Pablo), Fábrica de Tabacos, Las Tres Mil Viviendas, Bar La Hacienda (Calle San Hermenegildo), casas bajas Amate	Madre de Dios, San Bernardo, Sevilla Este, Santa Cruz, barriadas del Polígono Sur, San Julián, Amate
Anochece en la India **(Chema Rodríguez, 2014)**	Calles Pastrana y Alba de Tormes	Amate
Carmina o Revienta **(Paco León, 2012)**	Venta Calixto (Camino de la Reina), Calle Piel de Toro, Barriada La Oliva	Cerro del Águila, La Oliva
Carmina y Amén **(Paco León, 2014)**	Hotel Alfonso XIII, Calle San Fernando, Puerta de Jerez, Iglesia de San Antonio Abad (Calle Alfonso XII), Calle Fernando IV	Santa Cruz, Museo, Los Remedios

Figure 9. Locations and neighborhoods of the films in Itinerary 3
Note: Data from Sevilla Film and Events.

examined, Itinerary 3 cannot be categorized as a tour due to the considerable distance between the proposed locations, mostly located in lesser-known neighborhoods. However, the thematic elements appear to be consistent, particularly with regard to the new popular *costumbrista* o *quinqui* cinema genre, except *Anochece en la India*, a film that does not align with the other films in terms of theme or popularity.

3.4. Itinerary 4 "The most recent Seville"

The final itinerary is the most diverse of all the proposed routes from a cinematic perspective, as it encompasses eight films without any predetermined criteria, besides its composition as a diverse mosaic of all the adventures filmed in the city over the last decade (Figure 11). However, an examination of the locations revealed a growing interest among directors in showcasing the historic district of Triana, as evidenced by the production of films such as *El autor*, *El inconveniente*, and *Ocho apellidos vascos*. This phenomenon is also evident in films such as *Tu hijo* (Miguel Ángel Vivas, 2018) and *Yo, también* (Álvaro Pastor and Antonio Naharro, 2009), both of which depict densely visited neighborhoods (Arenal, Museo, Encarnación, and Feria), alongside new locations in a neighborhood undergoing rapid development and infill, characterized by the construction of residential properties intended for tourism. Therefore, the suggested locations appear to concentrate on specific areas of the historic district of Triana, including the Callejón de la Inquisición, Calle Betis and Isabel II Bridge, Plazuela de Santa Ana, and Calle San Jacinto.

The earliest film in the sample was *Yo, también*. The film was directed by Álvaro Pastor and Antonio Naharro in 2009 and received significant acclaim as the first Spanish film to feature an actor with intellectual disabilities, a role that was played by Pablo Pineda. In the film, he portrays the character of Daniel, a recent university graduate who commences employment in a municipal office. It is there that he encounters Laura (Lola Dueñas), with whom he becomes romantically involved and shares unique experiences. Besides the municipal offices where the protagonists are employed (Polígono Industrial Hytasa in Cerro del Águila), the remaining locations are concentrated in the Museo and Feria neighborhoods, as well as in the historic district of Triana (shown in brown, Figure 12), an area tending towards massification, and María Luisa Park, which serves as a poignant reminder of the romantic getaway of a couple with Down syndrome who simply aspire to live and love like any other couple.

Film	Audience	Awards
7 Vírgenes **(Alberto Rodríguez, 2005)**	995,648	**1 Goya Award** 6 Nominations
Adiós **(Paco Cabezas, 2019)**	320,213	3 Nominations
Anochece en la India **(Chema Rodríguez, 2014)**	10,384	1 Nomination
Carmina o Revienta **(Paco León, 2012)**	20,528	3 Nominations
Carmina y Amén **(Paco León, 2014)**	400,075	1 Nomination

Figure 10. Reception and awards of the movies in itinerary 3
Note: Data from Catálogo de Cine Español ICAA.



Figure 11. Posters of the films in Itinerary 4, "The most recent Seville"
Source: Modified from IMDb's images.

The film *Ocho apellidos vascos* (Emilio Martínez Lázaro, 2014) is regarded as the highest-grossing film in Spanish history, showcasing the most prominent stereotypes associated with the inhabitants of the northern region, i.e., the Basque Country, and the southern region, i.e., Andalusia. In a manner consistent with the style of other successful European films, such as *Bienvenu chez les ch'tis* (2008) and *Benvenuti al Sud* (2010), the film recounts the romantic misadventures of Rafa—a conventional young Andalusian, lover of Betis, and local festivities—in his quest for Amaia, a young Basque woman he encountered at a frustrated bachelorette party in Seville. During his



Film	Locations	Neighborhoods
El autor **(Manuel Martín Cuenca, 2017)**	Restaurante Abades Triana (Calle Betis), Metropol-Parasol (Setas de Sevilla en Plaza de la Encarnación), antiguo Mercado Puerta de la Carne (Estación de Cádiz, hoy gimnasio), Teatro Capitanía General (Plaza de España), hotel regionalista en Heliópolis, Paseo de la O, Puente de Isabel II, Plaza del Cabildo, Postigo del Aceite	Triana Casco histórico, Encarnación-Regina, San Bernardo, El Prado-Parque de María Luisa, Heliópolis, Arenal
El inconveniente **(Bernabé Rico, 2020)**	Torre Sevilla, Callejón de la Inquisición, despacho zona Glorieta de las Cigarreras	Triana Oeste, Triana Casco histórico, Los Remedios
Los niños salvajes **(Patricia Ferreira, 2012)**	Centro Deportivo Tiro de Línea, Estación de Autobuses Plaza de Armas	Tiro de Línea-Santa Genoveva, Museo
Morir **(Fernando Franco, 2017)**	Bingo en Calle Luis Montoto	Nervión
Ocho apellidos vascos **(Emilio Mtnez. Lázaro, 2014)**	Paseo Marqués de Contadero, Puente de Triana	Arenal, Triana Casco histórico
Tu hijo **(Miguel Ángel Vivas, 2018)**	Hospital Universitario Virgen del Rocío, vías del tren (Polígono Calonge), Real de la Feria, Conservatorio Municipal de Música Francisco Guerra (Edificio del antiguo Matadero), Calle Pureza, Plaza de Santa Ana, Paseo Rey Juan Carlos I, Puente San Juan de Aznalfarache	Bami, Los Remedios, Nervión, Triana Casco histórico, Polígono Norte, Tablada
Yo, también **(Álvaro Pastor y Antonio Naharro, 2009)**	Pensión Calle Bailén, Mercado Calle Feria, Pabellón de Argentina (Paseo de las Delicias), Calles San Jacinto y Rodrigo de Triana, Polígono Hytasa	Museo, Feria, El Prado-Parque de María Luisa, Triana Casco histórico, Cerro del Águila
A cambio de nada **(Daniel Guzmán, 2015)**		

Figure 12. Locations and neighborhoods of the films in Itinerary 4
Note: Data from Sevilla Film and Events.

travels, Rafa departs from Seville for the first time in his life, embarking on a journey to the Basque coast with the aspiration of persuading his reticent companion. It is noteworthy that, despite its substantial box office success, the film was only partially shot in the city. The iconic ending, featuring the musical duo Los del Río singing to the couple as they enter a horse-drawn carriage bound for Triana, has become emblematic (represented in brown, Figure 12).

The locations of *El autor* (Manuel Martín Cuenca, 2017) also focus on iconic spaces in the city. The film narrates the tale of Álvaro, a man of middling abilities who, exasperated by his former spouse's notable literary accomplishments, abandons his professional and personal obligations to devote himself fully to writing. He subsequently took up residence in an apartment in Plaza del Cabildo in the Arenal neighborhood (Figure 12). Through the use of manipulative tactics, he persuaded his neighbors to chronicle the events that would come to define his life. The film's locations encompass a range of sites, from walks with his ex-wife along the Paseo de la O in the Triana neighborhood (shown in brown) to book presentations in Plaza de España. These locations offer a glimpse into the more traditional aspects of the city.

A cambio de nada (Daniel Guzmán, 2015), in contrast, portrays an intergenerational narrative of solidarity, primarily set in the Aluche district of Madrid. Despite the limited number of scenes filmed in Seville, it is intriguing that a film of these characteristics was included in the movie map. Likewise, *El inconveniente* (Bernabé Rico, 2020) was filmed exclusively in the Triana (represented in brown in Figure 12) and Los Remedios neighborhoods, sharing the same spirit as its predecessor. In this film, the viewer is introduced to the character of Sara (Juana Acosta), who decides to purchase a residence in the heart of Seville at a reduced price, although with a "minor complication:" the current occupant of the property, Lola (Kiti Mánver), is permitted to reside in it until her demise. This low-budget film was released to modest success during the early stages of the COVID-19 pandemic.

The selection is further complemented by three non-mainstream films: *Los niños salvajes* (Patricia Ferreira, 2012), *Morir* (Fernando Franco, 2017), and *Tu hijo* (Miguel Ángel Vivas, 2018). The first paints a stark generational

portrait. It was primarily filmed in Catalan and set in Barcelona, with only two Andalusian characters portrayed by Ana Fernández and José Luis García Pérez. With regard to *Morir*, it is noteworthy that only the film's conclusion was shot in Seville, with the majority of filming took place in the Basque Country and Madrid. Conversely, the film *Tu hijo* was entirely shot in the city of Seville. In this film, the protagonist, a doctor (José Coronado), embarks on a quest for retribution against those who have left his 17-year-old son in a vegetative state. The narrative interweaves depictions of bustling neighborhoods, such as Triana and Los Remedios (shown in brown and yellow, respectively, Figure 12), with unknown locations in the Polígono Norte, Bami, and Tablada neighborhoods.

With regard to the reception of the eight films included in Itinerary 4 (Figure 13), it is characterized by significant disparities, ranging from relatively unpopular films (*El inconveniente*, *Los niños salvajes*, and *Morir*) to major box office successes (*Ocho apellidos vascos*). It is important to note that the films combining the two variables analyzed (audience and awards) were either only partially shot in Seville (*Ocho apellidos vascos* and *A cambio de nada*) or had a limited audience (*El autor*).

Once again, upon examination of the five principles of cine-mapping,[5] it is evident that Itinerary 4 only adheres exclusively to principle 1 and, in a limited capacity, to principle 4. The films incorporated into the map are not intended for a general audience and do not constitute serialized screen products, except *Ocho apellidos vascos* and its sequel, *Ocho apellidos catalanes*. The films' impact in Spain has been limited in terms of audience and popularity. Only the aforementioned saga has maintained its popularity 10 years after its release. Other films, such as *Yo, también* and *El autor,* have only attracted a niche audience. The films' lack of logical thematic organization results in their inability to attract tourists in an immersive way. The proposed locations are entirely arbitrary, although they tend to revert to a focus on traditional spaces. As with the itineraries previously analyzed, Itinerary 4 cannot be considered a tour. Although tourists are provided with a My Maps of the proposed locations, it is difficult to reach these locations within a reasonable amount of time, making it difficult to comply with principle 4, thereby contributing to the configuration of a fragmented and dislocated geography of the city of Seville.

4. Discussion

This paper analyzed the appeal and potential for decentralization of tourist flows in the itineraries by the Seville City Office through the areas dedicated to Film and Events, as well as their configuration according to the five principles of cine-mapping proposed by Burke *et al.*[5] It is conducted within the framework of a growing range of film itineraries in Spain's major urban destinations. Notwithstanding the absence of subsequent data from the Seville City Office regarding these itineraries, this study addressed this critical gap by offering a novel analysis of the itineraries' capacity to advance sustainable and inclusive tourism in Seville.

Despite the evident intention of the Seville City Office to encourage tourists to explore beyond the city center, it is apparent that the four itineraries, to a greater or lesser extent, rely on locations within the historic neighborhoods, never completely venturing outside the "scripted space" of the city.[1,2,25] However, Itinerary 3 "Neighborhood portraits" deviates from this norm, although it subsequently reverts to conventional locations (*Carmina y amen*). Furthermore, the initiative culminates with "The most recent Seville,"

Film	Audience	Awards
El autor **(Manuel Martín Cuenca, 2017)**	137,443	**2 Goya Awards** 9 Nominations
El inconveniente **(Bernabé Rico, 2020)**	40,812	3 Nominations
Los niños salvajes **(Patricia Ferreira, 2012)**	38,064	3 Nominations
Morir **(Fernando Franco, 2017)**	7,623	1 Nomination
Ocho apellidos vascos **(Emilio Martínez Lázaro, 2014)**	9,397,647	**3 Goya Awards** 5 Nominations
Tu hijo **(Miguel Ángel Vivas, 2018)**	66,421	1 Nomination
Yo, también **(Álvaro Pastor y Antonio Naharro, 2009)**	66,312	**2 Goya Awards** 4 Nominations
A cambio de nada **(Daniel Guzmán, 2015)**	127,724	**2 Goya Awards** 6 Nominations

Figure 13. Reception and awards of the movies in Itinerary 4
Note: Data from Catálogo de Cine Español ICAA.

an itinerary that proffers the Triana neighborhood as its primary attraction. This area has undergone substantial tourist gentrification over the past decade, resulting in its current state of saturation.

In this regard, two types of itineraries have been identified: those comprising films shot in popular locations with the capacity to attract tourists, but without decentralizing flows (e.g., Itinerary 1), and those filmed in unknown or semi-unknown locations with the potential to direct tourists to other neighborhoods, but with limited success (e.g., Itinerary 3). This analysis suggests a challenge in combining these two aspects to ensure the success of the itineraries and to deviate from the "scripted space"[1,2,25] of the city center, which is shaped by the tourist industry.

It is also noteworthy that, of the 25 films under consideration, the proposed itineraries feature locations for at least eight films that were partially filmed in the city. These include *Alatriste*, *La Isla Mínima*, *Cabeza de perro*, *Anochece en la India*, *Ocho apellidos vascos*, *Morir*, *A cambio de nada*, and *Los niños salvajes*. This further diminishes the appeal and identification of the proposed itineraries. Another salient issue pertains to the absence of spatial connection among these itineraries and the tourist reality of Seville. The locations appear as isolated entities, akin to pins on a map, thereby exacerbating the fragmentation of the geographical landscape of Seville. Consequently, this hinders potential tourists' ability to immerse themselves in the city.

The thematic content of the itineraries also appears to be deficient, as they do not promote products that exhibit a coherent and consistent thread. For example, Itinerary 1 resonates with both myths (Carmen) and Spain's recent history (the transition to democracy following the dictatorship of Franco), a quality that primarily appeals to a national audience. However, the most arbitrary theming is found in Itinerary 4, which brings together heterogeneous films with the sole aim of offering a mosaic of the latest productions shot in the city. In this line, Itineraries 2 and 3 pose significant challenges to the tourism industry. These itineraries target a niche audience, namely those who were acquainted with the city during that period, including domestic visitors and locals. In addition, they appeal to enthusiasts of Carmina Barrios, a prominent figure in Seville's cultural landscape. The marketing of these itineraries poses a particular challenge in appealing to international audiences. The locations featured in these itineraries are not typically suited for mainstream tourism, but rather appeal to a specialized segment of the tourism market, namely those interested in alternative or niche cultural experiences (e.g., dark tourism).

It can be determined that none of the itineraries adhere to the five principles proposed by Burke *et al.*[5] The majority of the itineraries only comply with principle 1 and, to a limited extent, with principle 4, attributed to their production and management by stakeholders and their promotion through an interactive My Maps. However, they are neither designed for a broad audience nor for the immersion of casual tourists, nor do they demonstrate a commitment to permanence. In this regard, it is crucial to acknowledge that the case studies used to establish the framework for a successful cinema mapping strategy were, as indicated, based on serialized film products and major sagas (e.g., *The Lord of the Rings*, *Star Wars*, and *Game of Thrones*),[5] rather than on a multitude of films that are tied to different themes and locations scattered across the city. This approach promotes a fragmented geography rather than immersive initiatives in the city of Seville.

In light of the findings and given the characteristics of tourist demands, particularly in the context of Seville, the following interrogations must be addressed:

(i) In the context of itineraries, both indoor and false locations have been incorporated, despite the contention by researchers[32-36] that impersonated locations lack the popularity of their authentic counterparts, except in circumstances where they attained viral status, for example, through the influence of social media personalities or fashion trends. A more thorough examination of this issue reveals the question of the identity and cultural heritage of the tourist destination—a question often overlooked when promoting such initiatives.

(ii) This principle extends to the selection of locations that are either obscure or controversial. It has been proposed that spaces be established to reflect the specific nature of location scouts' work. However, this proposal has not considered the relationship among these spaces, the tourism industry, and tourist demands. Thus, the principle of collaboration emphasized by Burke *et al.*[5] has been ignored.

(iii) According to the DMMO and the Smart Tourism Office, if the aim is to implement a long-term tourism strategy, Seville's managers should not rely on a cultural tourism subtypology with limited effects over time, as experts caution.[11-18] Since traditional landmarks will not be displaced from the city center, it is essential to provide sufficient attractions to achieve effective, long-lasting decentralization.

(iv) Finally, location scouts should consider television series, not only national films, as international overnight stays in Seville exceed domestic demand. Although international films usually feature the most recognizable tourist spots, it is important to consider them and seek productions that offer a different perspective. In this regard, Sevilla Film and Events

has recently launched a new Google My Maps to strengthen the relationship between the city's universal monuments (e.g., cathedrals, Plaza de España, and Alcázar) and cinema. However, the accompanying brochure is rather poorly designed.

These questions reveal the main problem with these itineraries—their misguided focus. This initiative oscillates between targeting tourists and residents without applying clear criteria for selecting films. As previously mentioned, the itineraries are only available in Spanish and feature locations in the historic center, interiors, vanished spaces, and marginal neighborhoods that are unsuitable for tourist visits and unlikely to attract foreign tourists. Similarly, the selection includes award-winning and critically acclaimed films, as well as lesser-known works and films where fashion plays an important role (*Carmina o revienta*), demonstrating a lack of symbolic productions that could establish an innovative yet coherent image of the city.

Seville suffers from a lack of large-scale film and television productions that could enhance audience recognition of the city and contribute to the development of a successful cine-mapping strategy. This strategy would integrate accessible locations in specific neighborhoods or spaces outside the city center and foster a consistent geography for tourism in Seville. Without this, Seville risks remaining a "narrated city," destined to become a "scripted space" based on secondary products if measures are not taken to prevent its Disneyfication. This initiative highlights the difficulty of designing routes in a space as rich and complex as Seville, going beyond the scripting of its historic center.[2,25]

In this vein, developing a major route dedicated to Alberto Rodríguez is strongly recommended, given his status as a famous Andalusian filmmaker and the number of his films included in the itineraries (only *El Traje*, filmed in 2002, would need to be included). Another option would be to design a route featuring the highest-grossing films in the sample. Most importantly, however, the Sevilla Film and Events Office and the Smart Tourism Office must effectively collaborate within the framework of the Seville City Office.

Despite the establishment of the Seville City Office, the film-promotion strategy for tourism remains a mere "top-down" action. Rather than being coordinated with the City Office's Smart Tourism Department, the initiative has been developed solely from the perspective of the Film and Events Department, which specializes in filming and locations rather than the promotion of new tourist attractions to ensure tourism sustainability. Launched without the consensus of the city's tourism sector and its citizens, this initiative risks confusing visitors, who already face an overwhelming amount of information about the city on the internet.

The results of this article are limited to analyzing the potential of the cine-mapping strategy to develop an innovative and sustainable tourism for Seville. Future research should seek to validate these results. As previously mentioned, one limitation of this study is the lack of outcome data provided by the Sevilla City Office regarding these itineraries. To address this, we propose a plan to validate the itineraries using tourist surveys. A plan to validate the itineraries using tourist surveys, My Maps analytics (when available), Geographical Information System walk-time clustering to test reachability, and before/after headcounts at non-central points of interest. Monitoring of the Seville City Office's actions will also shed light on its strategy for integrating culture, cinema, events, and tourism within a single organization. While this strategy is still in its infancy, it has already demonstrated insufficient coordination across its different sections.

5. Conclusion

The analysis of the film itineraries proposed by the Seville City Office reveals that, despite a clear intention to decentralize tourist flows and promote sustainable and inclusive tourism, these itineraries exhibit significant limitations. Most remain concentrated within the historic city center and fail to move beyond the city's "scripted space," while geographic and thematic fragmentation hinders tourist immersion and undermines the coherence of the offering. In addition, the lack of an integrated strategy among the responsible departments and the absence of data on the routes' effectiveness constrain the initiative's actual potential. To foster successful film tourism in Seville, it is essential to design routes that combine popular and alternative attractions, promote a coherent narrative, ensure effective collaboration among different tourism sectors, and validate both acceptance and impact through targeted studies. Without these measures, Seville risks perpetuating a fragmented and uninspired tourist image that neither fully leverages its audiovisual heritage nor contributes to genuine tourism decentralization within the city.

Acknowledgments

The author would like to thank the two anonymous reviewers for their recommendations, which have helped her to significantly improve this work.

Funding

This publication is part of the applied research and innovation project "Tourism for citizens: intelligence for

sustainable and participatory tourism," co-financed by the University of Seville (Plan Propio de Investigación y Transferencia) and European Regional Development Fund (ERDF), EU (SOL2024-31731).

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

Further disclosure

Part of or the entire set of findings has been presented in the 4èmes Journées Franco-Espagnoles de Géographie (Toulouse, October 19–20, 2023).

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Arts & Communication

ARTICLE

Public-private collaboration and the "Venice Effect": Chilean art in the Venice Biennale (2009–2019)

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(This article belongs to the *Special Issue: Art and Territories*)

Abstract

Biennials (also known as biennales) have proliferated globally, becoming key platforms for the international agenda of contemporary art. As central institutions of the art system, biennials serve as public arenas where cultural and foreign policies intersect with market dynamics—an archetype shaped by the Venice Biennale in 1895. This study analyzes the role of public-private collaboration in Chile's participation at the Venice Art Biennale between 2009 and 2019. Drawing on public-private partnership (PPPs) theory, dossier analysis, and interviews, the study adapts Johanson *et al.*'s methodology to assess the impact of this participation, commonly referred to as the "Venice Effect," and to examine the factors influencing this impact. The findings reveal that Chile's participation evolved from informal, network-based arrangements to more structured and transparent processes. Outcomes varied across cases depending on artists' career stages, international positioning, support structures, and the specific curatorial approach of each exhibition. Only one case resembled a formal PPPs. By treating the Biennale as a pivotal moment for artistic validation, this study contributes to ongoing debates on symbolic capital, cultural policy, and international projection. It highlights the need for cohesive cultural strategies and data-informed policies to support Chilean art on a global yet hierarchically unequal stage.

Keywords: Biennialization; Public-private partnership; Venice Effect; Valuation device; Cultural diplomacy

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Citation: Edwards MS. Public-private collaboration and the "Venice Effect": Chilean art in the Venice Biennale (2009–2019). *Arts & Communication*. 2026;4(1):025230053. doi: 10.36922/AC025230053

Received: June 3, 2025

Revised: September 8, 2025

Accepted: September 29, 2025

Published online: October 29, 2025

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1. Introduction

There are many ways to become an influential, respected, or "successful" artist. One could say that Cecilia Vicuña became visible only after receiving the Golden Lion at the 59th Venice Biennale in 2022. Others could argue that she already had a distinguished and politically engaged career across decades. It all depends on how we define recognition, prestige, and visibility. However, there is a common understanding in the art world: An active career beyond one's country of origin is perceived as a positive indicator of professional achievements. As Quemin[1] argued, international recognition emerges as a key criterion for artistic consecration.

While awards, scholarships, and certain exhibition venues provide some visibility, informal practices—embedded in circulation, pricing, mobility, and even authorship—play a fundamental role in determining artistic trajectories.[2-7] Debates around the cultural economy, creative industries, and symbolic value have offered theoretical frameworks,[8,9] yet empirical data to guide evidence-based cultural policy development in Latin America remains limited.[10] Fialho and Esmanhotto[11] highlight this gap while demonstrating the capacity of Global South countries to adapt effectively to external shocks when the art market is challenged. Their work shows that resilience became evident when cultural actors adopted digital platforms in response to the restrictions imposed by the COVID-19 pandemic.

This resilience, however, does not reflect a prior inclusion in and sudden exclusion from the international hegemonic art field. Rather, it emerges from a long-standing structural condition in which artists from the periphery, confronted with limited local opportunities, rely on mobility, relocation, and improvisational strategies to sustain their practice.[12] Despite these adaptive strategies, recognition by art institutions and the global market remains highly concentrated in a few Western countries, leaving a wide range of nations marginalized, playing "a minor role," whose "voices are seldom heard outside of the contemporary art biennials."[13]

In highly internationalized yet structurally fragile art systems, the interplay between state and private actors shapes access, visibility, and career trajectories.[14] Chile exemplifies this dynamic. As Castro[15] noted, the Chilean pavilion at the Venice Art Biennale would not have been possible without the sponsorship of international galleries representing "our" artists, revealing the country's dependence on external support even for national representation. Therefore, public-private partnerships (PPPs) are a key variable for understanding how artists from peripheral countries navigate global art circuits.

Despite its purported autonomy, the Chilean art field remains closely associated with its political and economic systems. Artistic production often relies on public funding rather than market mechanisms.[16] Even commercial galleries frequently establish non-profit entities to access public subsidies rather than depending on sales. Hence, the commercial side of the art world is still largely ignored or resisted, contributing to a structural opacity that hinders long-term cultural planning,[17] particularly in contexts where the state facilitates participation. Here, a dual logic emerges: Access and legitimacy are shaped both by national representation and by market dynamics embedded within global hierarchies.

In this context, the routes to autonomy are as complex as the routes to domination, if not impossible, according to Bourdieu.[18] Distinction is achieved not only through esthetic innovation or taste but also through understanding the strategic positioning required within the artistic field. Just as the rules governing domination are structured by economic, cultural, social, and symbolic capital, the paths to autonomy are shaped by these same forms of capital. This ongoing negotiation is especially acute for artists from a peripheral field like Chile's, who must navigate the challenges of inserting themselves into dominant, centralized art spaces to gain international recognition and professional achievement.[13] Platforms such as the Venice Biennale exemplify this dynamic, offering opportunities to accrue symbolic capital and visibility, even while maintaining historically entrenched structures such as the national pavilions.[13]

Even within the Biennale's highly structured framework, Cecilia Vicuña's Golden Lion award illustrates how recognition can unfold in ways that exceed the national logic of centralized institutions. A year after being invited by curator Cecilia Alemani to participate in the main exhibition, *The Milk of Dreams*, in 2022, Vicuña was awarded the 2023 Chilean National Art Prize by the government.[19] This highlights how platforms like the Venice Biennale generate symbolic capital that can shape subsequent national acknowledgment. It is not a question of the Biennale acting against its own hierarchies but rather of the complex dynamics at play.

Rather than erasing borders, the internationalization of art has reconfigured them around institutions, funding mechanisms, and influence networks.[3] Consequently, biennials have become privileged venues for observing how states and artists negotiate visibility, recognition, and legitimacy on the global stage.[20] The present study focuses on the so-called "Art Olympics"—the Venice Biennale, the "mother of all biennials," founded in 1895—and Chile's official participation from its national pavilion's launch in 2009 to 2019.

Chile has actively sought to internationalize its artistic production, but participation in global art circuits remains fragmented and under-evaluated. Despite the prominence of biennials in shaping artistic exhibition logics, empirical research on how national representation functions and translates into career impact remains limited,[21] particularly in the Global South.

This study addresses that gap through the following research question: How did public–private arrangements shape Chile's national pavilion at the Venice Biennale between 2009 and 2019, and in what ways did they influence the career trajectories of the selected artists?

Using a mixed-methods approach—including an integrative literature review, press and dossier analysis, exhibition data, and semi-structured interviews—this case study analyzes the Biennale as a valuation device,[21] assessing both the agendas and roles of State and private entities,[22] as well as the changes in their interactions and in artists' careers following each participation.[21]

In a country where state-funded cultural projects are both recurrent and contested,[16] this research seeks to understand the conditions under which cultural policy either enhances or limits international visibility. In doing so, it provides empirical insights into the symbolic hierarchies of global art circuits, the role of biennials, and the evolving place of the state within international cultural projection and image-building.

2. Theoretical framework

Cultural democratization has been a core value in the development of cultural policies since the 1960s. Although implemented through diverse designs and methods, most of these policies share the same objective: To promote cultural offerings and expand access to them. At the same time, the field has navigated ongoing tensions between state and market forces. With the aim of offering broader access to culture, institutional agents have assumed the role of promoting cultural production as a matter of public interest.[24] However, globalization, digitalization, and recurrent financial crises have intensified the challenges faced by contemporary artistic sectors.[25] These factors have made cultural funding increasingly vulnerable, highlighting the need for alternative mechanisms to support symbolic production and its internationalization.

2.1. PPPs in culture

Among these mechanisms, PPPs have emerged as a critical tool for the cultural sector, where funding remains one of the most persistent operational challenges.[26] PPPs are voluntary collaborations between public and private (profit and non-profit) entities that aim to achieve shared goals.[27,28] They can be understood as an "assembly tool" that aligns the interests of different sectors around a shared objective oriented toward collective action.[23] From Devlin and Moguillansky's[23] perspective, PPPs represent innovative forms of governance with the potential to align diverse institutional and social agendas toward common goals.

In Chile, PPPs peaked during the 1990s as an alternative strategy to attract private sector investment in infrastructure and the provision of public services. Over time, this instrument evolved into new forms of public-private cooperation with social goals.[29] This evolution can be understood as a modern intervention by the state aimed at promoting productive transformation, particularly when emphasis is placed on the social processes that bring both actors into closer collaboration.[30]

The implementation of PPPs in the cultural sector remains limited and understudied, mainly focusing on the conservation and/or renovation of European monuments and public facilities that, during their construction, incorporate a museum or art gallery into the building.[31] Even so, there is a growing interest in evaluating and promoting these innovative financial mechanisms for cultural initiatives, also known as "PPPs for Development."[32] These efforts extend beyond the traditional logic of concessions and associations found in traditional PPPs, evolving toward governance structures that are philanthropic, transactional, integrative, and participatory in nature.[33] Ultimately, PPPs represent a collaboration between both spheres to address development challenges in a globalized world.[32]

In this sense, it is necessary to promote the development of innovative projects in culture and the arts, as well as in education, focusing on society, history, and leisure. The implementation of PPPs in the cultural sector shares certain features with the principles of innovation-based financing. In both fields, initial risk-taking, the presence of novelty, and the establishment of a structured relationship across all levels of representation are key elements for competitiveness within an interconnected market.[31]

However, PPPs remain effective tools only if the state retains its autonomy in safeguarding public welfare; in Evans[34] words, maintaining its "embedded autonomy" to avoid capture by particular interests. This is particularly relevant when considering the autonomy of art from economic, market, and policy influences.[35] Moreover, as alliances are inherently idiosyncratic, there is no fixed formula that determines how they operate,[23] especially within the cultural field.

The idiosyncratic character of PPPs can also be understood through the lens of institutional logics. As Thornton *et al.*[22] argue, institutional logics provide networks of accessible structures that guide both attention and action. In cultural PPPs, actors draw on different logics—such as market, state, or professional/artistic agendas—depending on the relevance they attribute to specific contexts. This perspective highlights that PPPs in the cultural field are not standardized formulas but context-dependent arrangements shaped by the mobilization of actors around new value–practice couplets, interpretations, negotiations, and power relations.[36,37] It is precisely the coexistence and interaction of multiple logics that make these alliances possible, while also rendering them inherently unstable and open to transformation.[38]

At the core of these arrangements lies the question of value. Institutional logic theory is particularly useful for understanding how different orientations are mobilized and negotiated in cultural PPPs.[22] Each logic carries with it a distinct conception of value: The state logic emphasizes public welfare and cultural rights; the market logic stresses efficiency, competitiveness, and visibility; while the professional/artistic logic foregrounds creativity, autonomy, and symbolic experience.[22,39]

PPPs in the cultural sector thus operate at the intersection of these heterogeneous values, requiring actors to constantly balance, translate, and hybridize them in practice. From this perspective, the value of PPPs does not derive solely from their instrumental benefits, such as funding or image-building, but from their ability to sustain cooperation amid competing rationalities and to generate new value-practice couplets that redefine what is considered legitimate in both cultural policy and artistic production.[38]

A PPP in the cultural field constitutes a deeper relationship than mere sponsorship. It involves a structured plan in which the commitments and responsibilities of each party are made explicit within a framework of flexibility and adaptation. Rather than functioning as a closed structure, it represents a process of interaction in which new management techniques, best practices, and partnerships are combined to strengthen nation-branding instruments and enhance corporate reputation, while also energizing the cultural economy and increasing its appeal.[40]

Thus, compared to mere privatization, PPPs tend to be more accepted by the public. They do not imply the loss of ownership of public assets but rather establish a limited and project-specific partnership.[27] By sharing risks, resources, and knowledge, uncertainty is mitigated through a joint effort that enables long-term planning. Moreover, the inclusion of organized civil society facilitates the achievement of long-term objectives and reinforces collective well-being.[32]

In recent years, PPPs have been increasingly justified as a tool for promoting the internationalization of the cultural sector. The underlying argument is that when cultural organizations or independent agents gain visibility in the international circuit, they also contribute to shaping the country's image abroad—an aspect traditionally associated with public cultural diplomacy.[41]

Although cultural diplomacy depends on each state's administration, the platforms for cultural circulation have expanded globally, involving new agents in shaping the image of each nation. In this sense, "it is not possible to isolate the state's external cultural action from external influence. The image of a country responds to a multitude of factors that the state cannot control."[28] Therefore, this notion should be approached critically, as it does not imply that states fully control the perception of their cultural image. Within this context, the process is better understood as one of internationalization rather than globalization, since it emphasizes the circulation of culture, ideas, and artistic practices across borders, often mediated by both public institutions and private agents.[42]

This process has brought together the interests of both the public and private sectors in matters of global projection and nation branding.[28] Hence, the projection of a country's identity on the international stage responds to a complex interplay of elements such as market dynamics, institutional partnerships, and transnational networks, which can reinforce or challenge national narratives. Consequently, the collaboration between public and private sectors in cultural circulation reflects both strategic interests and the inherent unpredictability of cultural influence.[41]

In this way, the business knowledge and learning acquired by the public sector from the private sector,[43] in cultural terms, are enriched by new elements that help shape a nation's international projection. The most extreme example is Hollywood, an audiovisual mass exporter that, for decades, has illustrated an "American way of life" around the world. Other cases follow different models, such as Germany and the United Kingdom, which conduct much of their external cultural action through government-backed cooperation institutions like the *Goethe-Institut* and the British Council, respectively.[28]

As Redondo *et al.*[44] argue, artistic activities thrive through interconnectedness, transcending territorial boundaries and combining identity values with market logic. In Latin America, however, the internationalization process remains fragmented, often lacking cohesive public strategies and relying on individual efforts.[45] This tension is evident in biennials, which function as key sites for cultural diplomacy, symbolic validation, and market positioning in a highly interconnected art world.[46] Yet, the concept of internationalization and the presumed effectiveness of biennials should be questioned. Quemin[13] emphasizes that hierarchical structures within the global art system constrain the participation of countries from the Global South, limiting them to biennials as their primary points of entry into international circulation. While these events offer symbolic visibility, they rarely translate into sustained influence or integration within the broader global art market. This tension highlights the limits of PPPs and biennials as tools for sustainable internationalization, particularly for contexts in the Global South like Chile.

2.2. Biennials

The multiplication of biennial events, or the process of "biennialization,"[47] is not merely a factual trend but a phenomenon shaped by specific political and economic conditions that influence global artistic production. From this perspective, contemporary art biennials and their proliferation have contributed to the internationalization of the art market, its practices, and its associated counterculture.[48]

According to Enwezor,[49] biennials present themselves as a "diagnostic toolbox" capable of taking the pulse of a constantly changing global scene—that of contemporary art.[50] Today, biennials often emerge from agreements between cultural policy actors—both national and metropolitan governments—and private actors, thereby creating a platform for symbolic investment.[20]

Even if symbolic production is widespread, Sassatelli[6] argues that biennials serve as key arenas for its articulation, conceptualizing them as "symptomatic institutions" that reflect the current crises and opportunities of contemporary societies.[51] Similarly, art biennials are understood as institutions within the art system, whose functions include encouraging participation and public discussion around the meaning and role of contemporary art.[52]

Observing biennials offers a novel analytical lens, as they make visible cultural hierarchies, identity values, classifications, and global resonances almost simultaneously. From another angle, however, their growth also intensifies concerns about commodification, stemming from an irreconcilable assumption—the antagonism between economic and symbolic value.[6] Within the institutional logic framework, this tension can be understood as the clash between market-oriented logic, focused on commodification and exchange, and artistic or professional logic, which privileges symbolic autonomy and recognition.[18,22] At times, their fusion weakens the symbolic logic of art, thereby undermining its autonomy.[8]

Velthuis[2] argues that this model of hostile worlds is more sophisticated than a mere reduction to commercial value and thus overly simplistic. Sassatelli[6] suggests analyzing the coexistence of both spheres, since treating the competition between these worlds as a zero-sum game reduces the entire spectrum to economic logics and overlooks the ongoing interest in symbolic production and its specificity. This coexistence is complex and actively negotiated by artists, curators, and other intermediaries. As noted by Moulin,[53] the valuation of art operates at the intersection of market forces and institutional frameworks, where artistic legitimacy and economic recognition are continuously constructed and contested.

However, art institutions respond differently to the global economic system and its complexities. Challenges such as financial pressures and competition have encouraged the instrumentalization of art in pursuit of immediate and practical results.[54] This is particularly evident among biennials, where both curatorial criteria and the artworks themselves are conditioned by nationalistic values, economic considerations related to dissemination, and foreign policy agendas.[20] From this perspective, biennials function as a form of governmental action seeking to establish links with the private sector through the incorporation of new lines of action.

This logic is inherited from the "mother of all biennials"—the Venice Biennale—a public–private institution that seeks to represent a universal panorama of culture.[20] Though debated, the Biennale still aspires to be a reference point, offering "an unprecedented effect of order and certainty."[55] For this reason, ironic attitudes often arise, challenging the Biennale's capacity and ambition to provide a "state of the art" for contemporary art.[6]

Much of the critique stems from the national pavilion structure, a fundamental pillar of the Venice Biennale. Gardner and Green[56] describe this as an anachronic concept, a set of "oddly national little buildings, akin to the structure of World Expositions (Expos) and administered by a select group of nations." In this sense, given that Expos and Biennials serve as mechanisms that disseminate modern and Enlightenment ideals, it is unsurprising that both remain trapped within the critique of their own dialectic.[57]

Quemin[58-61] provides a long-standing analysis of the Venice Biennale's artist ranking reveals persistent inequalities: Among 21 countries analyzed, only three held privileged positions in the ranking, confirming that even in symbolically open structures, center-based hierarchies prevail, as the participation of artists from underdeveloped or peripheral countries does not reconfigure market rankings, thereby reinforcing existing inequalities.[13]

From the market and circulation perspective, the impact of participating in the Biennale generates what Velthuis[46] termed the "Venice Effect." Although participation is often seen as a milestone, the outcomes perceived vary and depend heavily on political, economic, cultural, and social factors.[21] For some, exhibiting in Venice boosts sales, triggers artistic careers, increases price levels, and helps artists secure higher-ranked distributors in the global art market. While business may be conducted more discreetly than at an art fair or commercial gallery, and even though monetary exchange does not occur visibly within the *Arsenale* or *Giardini* of the Biennale, the "market is never asleep."[46]

The effect stems from the widespread perception that exhibiting in Venice guarantees a certain level of quality and artistic legitimacy. It is a platform for showcasing everything, where tastes are shaped for the acquisition and collection of art.[46] Thus, governments around the world invest large sums of money to ensure their artists' participation in this event, as it has even been asserted that participation in the Biennale provides a positive boost to a country's profile.[21]

Returning to the Venice Effect, the term arises from observing the (unobserved) commercial scene of the Biennale. One sees calculations about the best way to position a piece for future dissemination, invoking the credo: "see it in Venice, buy it in Basel."[46] At its simplest, this reflects the possibility of a shift in market circulation.

However, there is limited empirical evidence that demonstrates the universality of the Venice Effect. To address this gap, Johanson *et al.*[21] conducted a comparative study on artists' exhibiting activity before and after their Venice participation. They found that established artists increased their international activity after exhibiting at the Biennale, while others failed to do so due to gender bias, peripheral status, and career stage factors.

Given the existence of effects for artists—though not universal—Chile's involvement can be critically analyzed through the differentiated outcomes experienced by each artist. Particular attention must be paid to the role of external funding sources, including state subsidies, corporate sponsorship, and gallery support, as they both shape viability and visibility. The central question, then, is whether public–private collaborations in this context generate long-term outcomes that simultaneously benefit the cultural field while also serving the interests of sponsoring sectors, or whether the gains and potential spillovers remain unevenly distributed, privileging one sphere over the others.

3. Methodology

This study adopted a qualitative case study design, focusing on Chile's official participations at the Venice Biennale of Art between 2009 and 2019. Situated within the field of cultural policy, the research considered the Biennale as a site where symbolic value, public and private funding, market dynamics, institutional logics, international projection, and artistic behavior intersect.

Following the study by Gerring,[62] we selected the case study approach due to its flexibility in capturing complex social, institutional, and symbolic processes within a bounded, comparative framework. The Chilean pavilion is understood not merely as a venue for exhibition, but as a collective social endeavor shaped by individual careers, collaborative efforts, and as a state-supported instrument of cultural internationalization policy.

Recognizing the interpretative nature of case studies,[63] the research integrated exploratory quantitative elements, such as the PPP index and dossier-based career mapping. Rather than seeking generalizable laws, the study aims to produce structured, evidence-based insights into how symbolic value, visibility, and institutional networks interact in the internationalization of Chilean contemporary art. In addition, the analysis included a historical overview (1974–2009) to contextualize Chile's transition from a marginal presence to official pavilion status.

3.1. Analytical framework

The study was drawn from a neostructuralist approach throughout public–private theory to frame the dynamics of each participation.[23] To systematically assess these dynamics, a PPP index was constructed. Some dimensions—public, private, and professional involvement—serve as proxies for the dominant institutional logic at play[22] (e.g., state, market, or artistic/professional), while the remaining dimensions capture structural and processual elements of the collaboration—explicit frameworks,[40] aligned goals,[27-28] mixed funding,[31] and learning process.[43]

An additional dimension—value orientation—explicitly records the dominant institutional logic,[22] providing a key lens for subsequent analysis of the Venice Effect.[46,21]

Dimensions that build the PPP index include:

(i) Public involvement: Degree of state participation, including funding, symbolic endorsement, and diplomatic support.
(ii) Private involvement: Engagement of galleries, corporations, and philanthropic organizations. This dimension reflects financial investment, logistical support, and reputational capital mobilized from the private sector in cultural initiatives.
(iii) Professional involvement: Participation of cultural field professionals, such as curators, critics, and museum staff, ensuring disciplinary alignment and the symbolic legitimacy of projects.
(iv) Explicit framework: Existence of formal agreements, contracts, or institutional arrangements that regulate the partnership. This reduces uncertainty, distributes responsibilities, and structures the collaboration beyond ad hoc or informal arrangements.
(v) Aligned goals: The extent to which the objectives of different actors converge, reconciling state interests in cultural diplomacy, private interests in visibility or reputation, and artists' pursuit of symbolic recognition and creative autonomy.

(vi) Mixed funding: Presence of diverse funding sources, combining public and private contributions, reflecting hybrid governance.
(vii) Learning process: Knowledge transfer, innovation, and networking generated through the collaboration, with potential long-term impact beyond specific projects.
(viii) Value orientation: Dominant institutional logic shaping dynamics and outcomes—state logic (emphasis on cultural rights and public welfare), market logic (efficiency, visibility, competitiveness), or artistic/professional logic (autonomy, creativity, symbolic value).

The Biennale is treated as a valuation device, recognized for generating symbolic legitimacy and reputation capital. This study adapted the methodology developed by Johanson *et al.*[21] using artist portfolios as data to measure the so-called "Venice Effect,"[46]—the impact of Biennale participation on career trajectories. In addition, this study primarily focused on Chile, highlighting how a peripheral country navigates a global hierarchy, where center countries dominate symbolic and market influence,[13] revealing both strategies and limitations in symbolic validation, institutional logics, gallery networks, and international exposure.[12] This approach aligns with Moulin's[53] analysis of the interplay between market forces and institutional recognition, highlighting how artistic value is continuously negotiated at the intersection of symbolic and economic circuits.

Although the ideal approach would rely on primary art market data, such information is rarely accessible.[21] Therefore, artist dossiers (portfolios) serve as a practical alternative, providing a chronological and verifiable record of artistic activity, international exhibitions, and institutional recognition.[64]

3.2. Data sources

Primary data sources include:
(i) Policy documents and press releases: Retrieved in 2022 from the Ministry of Culture, Arts, and Heritage, the Ministry of Foreign Affairs of Chile, and the Chilean art online magazine (*Artishock*). Sources were used mostly for mapping public–private dynamics and general context.
(ii) Transparency requests: Solicited in 2022 and verified via online searches in 2005, confirming the absence of a systematic funding record (except for 2019).
(iii) Artist dossiers: Retrieved in 2025 from three different sources for all six artists who participated in the Venice Biennale in the Chilean National Pavilion between 2009 and 2019. *Artistas Visuales Chilenos* (Chilean Visual Artists) of *Dirección de Bibliotecas, Archivos y Museos* (Directorate of Libraries, Archives, and Museums) for all six, the artists' official website, and one or two galleries representing the participant.
(iv) Semi-structured interviews: Conducted in 2022 with five of the participating artists (Iván Navarro, Fernando Prats, Alfredo Jaar, Bernardo Oyarzún, and Voluspa Jarpa) and two private agents. The first agent, Antonio Arévalo, played a key role in curating and securing the official Biennale participation, while the second, Alfonso Díaz, co-managed, through *Fundación Antenna* (Antenna Foundation; a non-profit Chilean organization that fosters philanthropy and collaboration to strengthen the country's visual arts ecosystem), the funding for Voluspa Jarpa in 2019.

Despite comprehensive data collection, several limitations remain:
(i) Paz Errázuriz, though included in the dossier analysis, was not interviewed due to unsuccessful contact attempts; therefore, she was not included in the PPP index analysis.
(ii) Although Lotty Rosenfeld also participated in the 2015 Venice Biennale, she was excluded from the sample as she had deceased in 2020.
(iii) Alfredo Jaar's earlier participation in the 1986 exhibition is briefly included for comparative purposes, based on the artist's own statement regarding early-career impact.

3.3. Data analysis

The research combined quantitative and qualitative analyses, including:
(i) Public–private dynamics mapping: Each stakeholder's role and involvement was scored using the PPP index, ranging from 0 (non-existent or uninformed) to 3 (high). Scores were averaged to produce a standardized measure across cases.
(ii) Career mapping: Artists' activities were segmented over 5 years before and after their Biennale participation, tracking solo exhibitions, group shows, distinctions, and references, as well as the geographical and institutional scope of each exhibition. To support this, a comprehensive database was constructed, organizing dossier information by type of activity, city, country, institution(s), title, and date, allowing for detailed chronological and categorical analysis of career trajectories.
(iii) Comparative analysis: Public-private dynamics and career trajectories were compared across artists to identify similarities and variations in outcomes.
(iv) Interviews were coded using general concepts to contextualize and complement the data. The retrieved

narratives helped explain the different outcomes and revealed gaps in overall coordination.

3.4. Limitations

The 2015 Venice Biennial was not included in the public-private analysis due to miscommunication issues. The lack of accessible public documentation limited the capacity to quantify the state's funding across all editions. Only the 2019 project had a documented resource transfer agreement. In addition, these data limitations affect the generalizability of PPP index scores and the interpretation of the Venice Effect. Historical and qualitative contexts help compensate for incomplete quantitative records.

4. Results

4.1. From marginal participation to official pavilion (1974–2009)

Chile's engagement with the Venice Biennale emerged as a symbolic rather than an official presence. In 1974, the Biennale highlighted opposition to Augusto Pinochet's dictatorship through the "*Libertà per il Cile*" exhibition, featuring artists such as Gracia Barrios and José Balmes. After undergoing organizational changes, the International Art Exhibition did not take place in 1974, while theatre and cinema programs were organized that year and the following year (1975) under the same title and cause. The unofficial presence of Chile continued through curatorial invitations and the interest of the Italo-Latin-American Institute.[15]

The first attempt to establish a Chilean pavilion at the Venice Art Biennale took place in 2001, with an exhibition of Juan Downey's work, curated by Antonio Arévalo. Although it was not officially part of the Biennale's perimeter, the pavilion attracted a large audience and received an honorable mention from the organization.

According to Arévalo, the pavilion was hosted at the Thetis, a venue in Venice that was just emerging as an exhibition space and later gained prominence. The pavilion setup was minimal, with no formal services such as waiters and bottle openers. Visitors had to take a small boat to reach the site, and the artworks were presented in an amphitheater. Arévalo personally invited contacts via email, resulting in a turnout of approximately 500 people on the opening day. This initiative reflects both the informal nature of early Chilean participation and the resourcefulness required to secure visibility at the Biennale during that time (Antonio Arévalo, personal interview, October 13, 2022).

The official entry came in 2009, when concerns were raised within diplomatic circles about the limited visibility of Chilean art in the event. With the support of the Cultural Affairs Department of the Chilean Ministry of Foreign Affairs, Chile's official participation in the Venice Biennale was launched.[65] This marked a turning point: From dispersed curatorial efforts to an institutionalized presence backed by Chilean public institutions and private sponsors. A precedent was set by inviting an emerging artist with international representation, which secured funding and logistics for the event.

In 2011, Chilean curator Carolina Castro[15] acknowledged the efforts involved in launching a national pavilion at the Biennale, while also noting that it was "embarrassing to observe that the pavilion in Venice would not be possible without the sponsorship of international galleries representing "our" artists." She criticized the reliance on foreign financial support to enhance the country's image, arguing that this practice extended beyond the visual arts to a wide range of privatized national assets, including parks and territorial concessions to energy companies.

She had a point: The first two official participations of Chile in the Art Biennale were largely made possible by the involvement of international private entities. She highlighted the cultural fissures embedded in the institutional framework and contended that participation in such high-profile events often served to embellish the surface of Chilean art while failing to address deeper structural issues, such as education, wisdom, and the authentic development of the national art scene.

Over time, the selection process for Chilean representation evolved. The direct-appointment system used in 2009, 2011, and 2013 was replaced by an open call,[66] with publicly announced requirements, resources, participating institutions, and jury members. This framework mirrored the model of the National Fund for Cultural Development and the Arts, established in 1992, which had undergone its own series of adjustments over the years. Similarly, the governance of artistic affairs shifted from a Cultural Council that answered to the Ministry of Education to a Ministry of Culture, Arts, and Heritage, founded in 2018.[67]

These changes illustrate broader trends in Chilean cultural policy—a growing national interest in international visibility, increasing professionalization, expanding access to global opportunities, and ongoing negotiations regarding the role of public and private actors.

In its early years, the reliance on international galleries demonstrates how public-private collaborations were central to enabling Chilean participation on this global platform. These collaborations reveal both opportunities and tensions: On one hand, access to funding, networks,

and international circulation; on the other, concerns over national cultural sovereignty, policy coherence, and equitable support to artists.

4.2. PPPs index scores by artist

Although PPPs are described as promising instruments in cultural governance,[26] the following collaborations are best characterized as project-based arrangements. However, the examined cases offer valuable insights into how functions traditionally associated with state-driven diplomatic tools now involve a wider array of actors from diverse backgrounds and origins.[28]

The PPP index was applied to all Chilean participations in the Venice Art Biennale from 2009 to 2019 by analyzing seven dimensions. Each dimension was scored on a scale from 1 (very low) to 6 (high), based on qualitative evidence from interviews, funding sources, curatorial involvement, contractual arrangements, and documented learning processes. The resulting scores (Table 1) reflect both the intensity and effectiveness of contributors, as well as the degree of formalization and knowledge transfer.

4.2.1. Scoring rationale by artist

(i) Iván Navarro: The state contributed moderate funding and limited strategic involvement, mostly related to enabling the first official invitation (public = 4), while the Templon Gallery provided decisive experience and support for production and circulation (private = 6). Professional coordination through curators was essential (professional = 6), but the absence of formal contracts reduced the explicit framework score (score = 2). Goals were partially aligned, primarily in the novelty of the project: The state sought to present a new pavilion, while the gallery supported an emerging artist's debut (aligned goals = 5). Mixed funding was effective (score = 6), and mutual learning was moderate, mostly reflecting the state's reliance on the gallery's know-how (score = 4).

(ii) Fernando Prats: State support included partial funding and substantial operational and production logistics, as the artwork traveled to Antarctica on a Defense Ministry vessel (public = 5),[68] with resources complemented by Gallery Joan Prats (private = 5). Curatorial and artistic oversight ensured legitimacy (professional = 6), though formal agreements were lacking (explicit framework = 2). Objectives were aligned, since the artwork showcased the Chilean landscape (score = 6). Co-financing was effective but informal (score = 6), and learning occurred mostly at the individual artistic level (score = 3).

(iii) Alfredo Jaar: The state's contribution was limited to partial and delayed funding and formal recognition (score = 2), whereas galleries provided most financial and logistical support (private = 6). Professional involvement was through the artist's studio in New York and curatorial oversight (score = 6). As in the two previous editions, the invitation lacked an explicit framework (score = 2). The artist's goal was to critique the Biennale's hierarchical structure, while the state aimed to consolidate its presence through the participation of a consecrated Chilean artist (score = 1). Mixed funding was modest (score = 3), as private entities provided most of the resources. The learning process was minimal (score = 1), as stakeholder interaction was limited.

(iv) Bernardo Oyarzún: State funding was essential but insufficient, and the management relied heavily on the artist's initiative (public = 5). Private support was minimal due to the artist's and curator's principled refusal (private = 1). Professional involvement was high (score = 6), as the project's execution depended on the artist's personal resources. The framework was explicit, following an open call similar to that of 2015, but limited by administrative and bureaucratic complications, including taxes required to transfer funds from the Paraguayan account of the curator/commissioner to the artist for production (explicit framework = 4). The objectives were partially aligned (aligned goals = 5), as the exhibition was selected by a state-appointed jury, ensuring the artist's creative control while highlighting the long-standing marginalization of Mapuche communities in Chile. Funding was almost exclusively public (mixed funding = 1), and the learning process (score = 4) was primarily personal and reflective, focusing on navigating logistical and administrative challenges.

(v) Voluspa Jarpa: Public support was strong, and the state's administration managed the open call for selection, provided part of the funding, and ensured the pavilion's legitimacy (public = 5). The funds were insufficient for the project's ambition; therefore, private contributions were decisive in securing the production, dissemination, and Chilean agents' participation during the event (private = 5). Professional involvement was crucial (score = 6), since the artist and her team orchestrated the collaboration. Selected through an open call, the framework was explicit (score = 6). A notable novelty was that, unlike previous editions, Jarpa negotiated the contract to avoid defining the artwork as a public cultural asset, as stipulated in the previous edition. Objectives were largely aligned due to effective communication practices (aligned goals = 6), financing was clearly hybrid (mixed funding = 6), and mutual learning was consolidated across all three levels (score = 6).

The findings revealed that the PPP index demonstrates substantial variation in the balance of public, private, and professional involvement across Chilean participation in the Venice Art Biennale. Voluspa Jarpa exhibits the strongest overall engagement (PPP = 40), reflecting a robust alignment of objectives, hybrid funding, and structured collaboration between public and private actors.[69] Iván Navarro and Fernando Prats show similarly high scores (PPP = 33), both driven by decisive private support, experience, and professional coordination, despite limited formal frameworks. In contrast, Alfredo Jaar and Bernardo Oyarzún scored lower (PPP = 21 and PPP = 26, respectively), reflecting a high reliance on the artists' own resources and minimal private or institutional backing.

These differences suggest that while high PPP scores correlate with better-resourced and more coordinated projects, the ultimate "Venice Effect" on career trajectories does not align closely with them (Table 2). Jarpa had strong alignment and hybrid funding but experienced a modest decline in post-Biennale activity (−12), whereas Navarro declined (−20) and Prats increased (+8), indicating that similar PPP levels (PPP = 33) can lead to different outcomes. Alfredo Jaar maintained stable activity (+2) and expanded internationally (+10 countries), while Oyarzún faced a sharp decline (−26 total; −8 countries), highlighting how limited private support constrains potential gains. Overall, the PPP index captures enabling infrastructure, yet the "Venice Effect" depends on both institutional support and broader artistic dimensions.

Table 1. Public-private partnership index and agent mapping for Chilean participation in the Venice Biennale (2009–2019)

Dimension/actor	Artist (participation year)					
	Navarro (2009)	**Prats (2011)**	**Jaar (2013)**	**Errázuriz (2015)**	**Oyarzún (2017)**	**Jarpa (2019)**
Selection method	Direct appointment	Direct appointment	Direct appointment	Open call	Open call	Open call
Public	4	5	2	-	5	5
Private	6	5	6	-	1	5
Professional	6	6	6	-	6	6
Framework	2	2	2	-	4	6
Goals	5	6	1	-	5	6
Funding	5	6	3	-	5	6
Learning	4	3	1	-	5	6
PPP index	4.57	4.43	3.39	-	4.29	5,14
Key public actors	DIRAC, CNCA, ProChile	DIRAC, CNCA, Chilean Army, ProChile	DIRAC, CNCA	DIRAC, CNCA	DIRAC, Ministry of Culture	DIRAC, Ministry of Culture
Key private actors	Galerie Templon	Gallery Joan Prats	[a]	-	-	*Fundación Antenna*
Curatorial/professional	Antonio Arévalo; Justo Pastor Mellado	Fernando Castro Flórez	Madeleine Grynsztejn	Nelly Richard	Ticio Escobar	Agustín Pérez Rubio

Note: [a]Goodman Gallery (Johannesburg and Cape Town), Galerie Lelong (New York), Kamel Menour (Paris), Galerie Thomas Schulte (Berlin), *Fondazione Giuliani per l'arte contemporanea* (Rome), and *Impresa Construzione Ulisse Navarra* (Rome). Data are based on the author's own elaboration from open call guidelines, interviews with participants, and press analysis.
Abbreviations: CNCA: National Council of Culture and the Arts; DIRAC: Division of Cultures, Arts, Heritage, and Public Diplomacy; PPP: Public-private partnership.

Table 2. Artist activity and public-private partnership index

Artist/category	Public-private partnership index score	Δ Solo exhibitions	Δ Group shows	Δ Total activity	Δ Destination countries
Iván Navarro (2009)	33[a]	+5	−20[b]	−20[b]	0
Fernando Prats (2011)	33[a]	+10	+6	+8	+3
Alfredo Jaar (2013)	21[a]	+8	−5[b]	+2	+10
Bernardo Oyarzún (2017)	26[a]	+4	−21[b]	−26[b]	−8[b]
Voluspa Jarpa (2019)	40[a]	+1	−13[b]	−12[b]	0

Notes: [a]indicates the total score for PPP index; [b]indicates negative results. Data are based on the author's own elaboration from open call guidelines, artists' dossiers, interviews with participants, and press analysis.

Nevertheless, the "Venice Effect" also varies by category, and overall activity alone does not fully capture its nuances. Reductions in group shows are not necessarily negative, as they may instead reflect a shift toward more selective, high-profile opportunities. Increases in solo exhibitions or international venues often signal career consolidation and the accumulation of symbolic and market privileges, suggesting that changes in specific metrics can indicate strategic advancement rather than professional decline.

The following section examines the "Venice Effect" in greater depth to explore other dimensions that shape its impact, moving beyond overall activity to consider the qualitative shifts in visibility, recognition, and international positioning associated with the Biennale.

4.3. The Venice effect: Measuring its impact on artist trajectories

To assess the impact of participation in the Venice Biennale, a 5-year window before and after each edition was used to analyze four categories: Solo exhibitions, group shows, distinctions, and references. Country diversification was also measured as an indicator of international reach. Each year of participation was compared with the artist's career stage at that time to contextualize the observed variations.

4.3.1. Iván Navarro (2009 Venice Biennale)

This trajectory reflects a shift from quantity to quality. As shown in Table 3, the total activity of Iván Navarro decreased by −20 units, yet solo exhibitions—typically regarded as higher-value opportunities—increased by five. This rise suggests a consolidation in terms of selective privilege, marking a transition from an emerging artist toward more curated and institutionally endorsed formats—a strong indicator of professional consolidation. Furthermore, the reduction in distinctions (−3) and group shows (−20) underscores his increasing emphasis on selectivity and a growing alignment with new opportunities within prestigious international circuits.

His international reach remained stable, with activity recorded across 22 countries, indicating that his participation in Venice maintained rather than diminished his global positioning. The artist reported that the effects of participating in the Biennale have remained positive to this day. He noted that, as an emerging artist, the international positioning and gallery support he had were key to navigating the event, as well as to managing the subsequent changes observed after the Biennale.

4.3.2. Fernando Prats (2011 Venice Biennale)

This case illustrates a distinctly positive "Venice Effect." Following his participation in the Biennale, solo exhibitions increased by 10 records, while geographic diversification expanded by three additional countries, suggesting that his participation effectively launched him into broader international circuits.

This interpretation is supported by the artist, who stated that his participation in the Venice Biennale served as an entry point into the international art circuit. He explained that his approach to the exhibition was not as a culmination of his career but rather as a continuation of his mid-career development (Table 3).

Although there was a decline in distinctions (−2) and bibliographical references (−6), overall activity increased by eight (Table 3), reinforcing the idea that the Biennale facilitated his integration into higher-visibility international networks.

4.3.3. Alfredo Jaar (2013 Venice Biennale)

In this case, the artist was already an established global figure by the time of his 2013 participation, and the Biennale did not redefine his career. As shown in Table 3, total activity increased only slightly (+2), while country diversification expanded by 10 and solo exhibitions by eight, reflective a selective privilege consistent with an already consolidated international career. This participation functioned as a symbolic intervention and a critique of the Biennale itself, rather than an expansion tool for his career. When asked about the effects, the artist stated that the most significant impact occurred in 1986, when he became the first Latin American artist to exhibit at the Biennale. Nevertheless, his 2013 participation had notable national repercussions: Shortly after the pavilion's opening, Jaar was awarded Chile's National Art Prize. In the following years, he received an *honoris causa* distinction from the *Universidad de Chile* (University of Chile) in 2021 and later held his first solo exhibition at the *Museo Nacional de Bellas Artes* (*National Museum of Fine Arts*). This suggests that the Biennale may have contributed to renewed symbolic recognition within Chile's institutional sphere.

As shown in Table 3, his earlier participation in the 1986 Venice Biennale had a catalytic impact: Solo exhibitions increased by 30, group shows by 32, references by five, and country diversification expanded by 9. Overall activity increased by 63, marking 1986 as a decisive turning point in his international projection as an emerging artist. This contrast underscores the relevance of timing and career stage in shaping the Venice Biennale's impact, as early exposure can operate as a breakthrough mechanism with lasting effects.

4.3.4. Paz Errázuriz (2015 Venice Biennale)

The 2015 participation of Paz Errázuriz represents a case of measured and consistent growth. As shown in Table 3,

Table 3. Venice effect: Changes in artistic activity before and after participation in the Biennale

Artist (participation year)	Career stage (years)	Category	Before participation in the Biennale	After participation in the Biennale	Variation
Iván Navarro (2009)	13	Solo exhibition	17	22	5
		Distinction	4	1	−3
		Group show	62	42	−20
		References	9	7	−2
		Total activity	92	72	−20
		Destination countries	22	22	0
Fernando Prats (2011)	19	Solo exhibition	19	29	10
		Distinction	2	0	−2
		Group show	16	22	6
		References	12	6	−6
		Total activity	49	57	8
		Destination countries	7	10	3
Alfredo Jaar (2013)	34	Solo exhibition	27	35	8
		Distinction	0	1	1
		Group show	148	143	−5
		References	12	10	−2
		Total activity	187	189	2
		Destination countries	29	39	10
Alfredo Jaar (1986)	7	Solo exhibition	3	33	30
		Distinction	5	1	−4
		Group show	28	60	32
		References	2	7	5
		Total activity	38	101	63
		Destination countries	7	16	9
Paz Errázuriz (2015)	35	Solo exhibition	16	22	6
		Distinction	2	3	1
		Group show	12	12	0
		References	10	10	0
		Total activity	40	47	7
		Destination countries	10	11	1
Bernardo Oyarzún (2017)	19	Solo exhibition	3	7	4
		Distinction	2	0	−2
		Group show	29	8	−21
		References	10	3	−7
		Total activity	44	18	−26
		Destination countries	10	2	−8
Voluspa Jarpa (2019)	23	Solo exhibition	8	9	1[b]
		Distinction	2	3	1
		Group show	23	10	−13
		References	2	1	−1
		Total activity	35	23	−12
		Destination countries	14	14	0

Notes: Data were compiled from three primary sources for each artist: *Artistas Visuales Chilenos* (Chilean Visual Artists) of *Dirección de Bibliotecas, Archivos y Museos* (Directorate of Libraries, Archives, and Museums), the artists' official website, and one or two representing galleries.

solo exhibitions increased by six, distinction increased by one, and group shows and references remained stable. These shifts resulted in a total activity increased by 7, suggesting that the participation in Venice contributed to the consolidation of an already established trajectory of 34 years (Table 3).

No major changes were observed in her geographic diversification, consistent with a well-balanced exhibition record across the national territory—including regional and civic cultural centers—indicating a stable circulation framework already in place before Venice.

Notably, her institutional visibility was further strengthened within both national and international circuits focused on feminist and documentary practices. At the national level, the artist received the National Art Prize in 2017, while institutions such as the *National Museum of Fine Arts* continue to play a central role.

4.3.5. Bernardo Oyarzún (2017 Venice Biennale)

The 2017 edition presents the most pronounced decline in total activity among the cases studied. As shown in Table 3, Bernardo Oyarzún's overall activity dropped by 26 units, while country diversification decreased significantly (−8). Although solo exhibitions increased by four, this shift stems from a low baseline and should be interpreted with caution. Group shows (−21) and references (−7) declined significantly, further signaling a shift in career dynamics.

His career post-Venice Biennale appears to have turned inward, focusing more on local and territorial engagement, a direction aligned with the artist's stated interest and long-term research. Notably, his Chilean exhibitions are not centralized in the capital; on the contrary, they are distributed across the country, reinforcing a deliberate strategy of decentralization and cultural redistribution within the national context.

4.3.6. Voluspa Jarpa (2019 Venice Biennale)

The results for this case are mixed, partly influenced by the disruptions caused by the COVID-19 pandemic. As shown in Table 3, Voluspa Jarpa's total activity decreased by 12, yet solo exhibitions increased by one, and international reach remained stable across 14 countries. While the quantitative effects are limited, qualitative evidence suggests that participation in Venice enabled the artist to reposition herself within international circuits. Her gallery in France, Mor Charpentier, reported a rise in the market value of her artworks.

The artist herself attributes these positive outcomes to the learning and professional exposure gained through the intensive process of preparing and presenting in Venice. She emphasized the scale and stakes of the event, stating that "not just anyone can exhibit in Venice, being there can also be the graveyard of a career." In her view, successfully presenting work at such levels demonstrates the extent of what an artist is capable of achieving.

4.4. Discussion and contextual analysis

The Venice Biennale goes beyond a mere exhibition—it is an arena for symbolic production, competition, cultural positioning, and the projection of national identity. The Chilean experience shows that private support is both a reality and a key driver of the nation's participation. In this light, PPPs are potentially valuable instruments for cultural promotion and internationalization. However, their impact remains unpredictable, as the actors and resources involved constantly change and manifest as project-based arrangements. Hence, it is unclear whether these partnerships benefit the partners involved equally or whether the loosely structured collaborations tend to privilege one sphere over the other.

From an institutional perspective, the Biennale signifies a missed opportunity for a more structured approach to cultural diplomacy. As argued by Marco and Otero,[28] if a nation's image is influenced by actors beyond governmental structures, public institutions must develop their capacity to coordinate and activate these stakeholders. The pavilions operate within the domain of symbolic capital, where the generated value tends to be diffuse and often invisible within political agendas. However, this does not imply a lack of returns; rather, it indicates that Chile's public cultural policies are insufficiently equipped to measure and manage these returns effectively.

The constant changes, coupled with the lack of transparency and data on public spending, complicate the further evaluation of the returns from these participations and the formulation of policy recommendations. The answer is complex when viewed through the lenses of public policy. Evidence confirms that the Biennale can produce positive outcomes, especially regarding institutional visibility, artistic recognition, and long-term career advancement. As for the state's cultural projection, simply "being there" suggests that the country respects and supports its artists and cultural diversity (Fernando Prats, personal interview, October 6, 2022).

Although the commercial dimension of these effects was not measured, the artists who had an international gallery supporting their pavilion—such as Navarro, Prats, and Jaar—demonstrated higher levels of activity, indicating broader circulation within the international art scene than those without such affiliations. However, the impact of the Biennale on each artist's career tends to yield more positive

outcomes when artists are supported by private entities. Nevertheless, this argument is supported by contrast when observing Oyarzún's case, where the absence of private backing coincided with weaker effects.

To address the outcomes perceived by the artists, one must consider that, overall, the Venice Effect is inconsistent and highly uneven. Additional dimensions beyond funding patterns emerge, and these are briefly outlined below:

4.4.1. Career stage

The stage of an artist's career influences the effects, especially in terms of showcasing consolidated artists such as Alfredo Jaar and Paz Errázuriz. Both artists participated in the Biennale with over 30 years of active careers (Table 3), and their outcomes tend to reinforce pre-existing reputations rather than generate major growth in activity. Furthermore, both established artists received the Chilean National Art Prize shortly after their participation in Venice.

The only emerging artist featured in the Chilean pavilion was Iván Navarro, and although his overall outcomes showed a decline, a positive effect was observed in solo exhibitions and in the maintenance of a wide geographical diversification across 22 countries. Although the catalytic effect is more evident in Jaar's 1986 exhibition, the volume of Navarro's activity at that career stage remains remarkable and difficult to sustain.

Regarding mid-career artists, Prats stands out compared to Jarpa and Oyarzún, showing substantial growth in solo exhibitions. In contrast, the latter two display more modest or declining activity. Regardless, dimensions such as geographical positioning and unforeseen events influenced their outcomes, including the impacts of relocation and the COVID-19 pandemic.

4.4.2. Geographic positioning

In terms of activity volume, the exhibitions by Navarro, Prats, and Jaar stand apart from the rest, demonstrating higher levels of activity compared to those of Errázuriz, Oyarzún, and Jarpa. The key difference is that Navarro, Prats, and Jaar had established themselves in New York and Barcelona years prior to their participation in the Biennale, securing an international positioning that the others had not yet achieved. A relevant metric for this is artistic mobility, and these findings provide clear evidence of its impact.

4.4.3. Unforeseen events

External factors beyond the artist's control, such as the COVID-19 pandemic and mass uprisings like Chile's *Estallido Social* in October 2019—a popular revolt against neoliberal policies and deep structural inequalities—disrupted exhibiting circuits and funding flows, restricted mobility, and reshaped institutional agendas. These external forces can obscure or interrupt the catalytic effects typically associated with Biennale participation, underscoring how artistic trajectories are also conditioned by broader struggles and systemic crises.

Returning to the public-private dynamics and their correspondence with the Venice Effect, the 2019 edition stands out as an anomaly—a rare case of public-private synergy that amplified impact, broadened networks, and revealed what effective partnerships can accomplish. The fact that it remains exceptional underscores an urgent need for improved coordination, institutional knowledge retention, and strategic foresight.

Until such improvements occur, determining whether participation is "worth it" will remain contingent: Yes, but only if executed effectively. This requires ensuring inclusivity and recognizing the value of alternative international platforms to assess which best align with the realities of Chilean art production and available resources.

Nonetheless, econometric studies and the quantification of cultural data remain debated topics, as the social and symbolic role of culture should be sufficient to justify public funding in this field.[70] That discussion, however, lies beyond the present scope.

5. Conclusion

The objective of this study was to determine whether public-private dynamics influenced the career trajectories of artists following their participation in the official Chilean pavilion at the Venice Art Biennale, during the first decade since its launch. It combined dossier-based analysis with semi-structured interviews to examine the impact behind the so-called "Venice Effect" on each artist's career and the potential of a multistakeholder policy model. Although the subject remains open and context-dependent, this study identifies several key findings.

The study revealed that the impact of the Venice Biennale is an inconsistent factor in shaping the careers of these six artists. While some artists, such as Fernando Prats, Iván Navarro, and Voluspa Jarpa, leveraged the platform to maintain or consolidate their entry into international circuits, others, including Alfredo Jaar and Paz Errázuriz, used it to reinforce their already established status. Bernardo Oyarzún's case illustrates the challenges of a highly symbolic exhibition that relied solely on institutional support and local anchoring. However, cases such as Oyarzún's illustrate that visibility does not always translate into sustainability. Even with institutional support, artists

may face stagnation, particularly when re-entering local circuits without adequate follow-up or strategic guidance. Meanwhile, well-structured frameworks, such as Jarpa's 2019 participation, allow artists to focus on production and international exposure.

These findings support the idea that the "Venice Effect" is real but contingent, and that international cultural projection depends on strategic planning, the dimension of artistic recognition, and cross-sector alignment. The results indicate that the observed outcomes were less influenced by the mere act of participation and more by artists' international networks, career stages, unforeseen events, and the presence—or absence—of structural support and administrative systems.

Building on the main conceptual pillars of this study, prioritizing cultural access and the democratization of artistic opportunities emerges as a key consideration when examining the logic of state-funded platforms such as national pavilions. The evolution of the process, from diplomatic appointments to public contests, reflects an ongoing effort to promote culture as a public good tied to national interests and global representation.[24] At the same time, it reveals persistent gaps in evaluation mechanisms, systematized archives, accessible cultural data, and updated structures for cross-sector bridging networks necessary to foster collaboration. These are crucial components for ensuring smoother administrative processes and optimizing cultural policies that acknowledge the complexities of contemporary international cultural projection.

PPPs, although traditionally applied to infrastructure, have found increasing application in the cultural sector, offering a flexible framework for cooperation between the state and private agents. As noted by Casado,[32] Devlin and Moguillansky,[23] and Minguella,[40] there is no fixed formula for implementing PPPs—a point further supported by the present study, as the collaborations examined are highly idiosyncratic and context dependent. Only the 2019 selected project displayed the defining characteristics of a PPP, while the other editions appeared more occasional and fragmented in nature.

Nevertheless, the Chilean experience reveals that the Biennale's impact on artists' careers tends to be greater when participation is backed by private entities with international management capacity, as the formal and logistical burdens are lifted from the artist. In this light, PPPs represent a valuable instrument for cultural promotion.

As for the last theoretical topic, drawn from Velthuis[24] and Johanson *et al.*,[23] the Venice Biennale can be conceptualized as a "valuation device"—a platform that produces both symbolic capital and international visibility. However, its impact is highly variable and reflects the inherent tensions between symbolic recognition and commercial circulation. As Quemin[59-61] argues, the event also reveals persistent global power asymmetries and hierarchies within the art world. This is particularly relevant in the Chilean case, where higher volumes of international artistic activity are most evident among artists living abroad, such as Navarro, Prats, and Jaar. Therefore, the so-called "Venice Effect" is neither automatic nor guaranteed; it is conditioned by the artist's prior trajectory, the institutional network supporting the participation, and broader circulation dynamics.

However, the combination of these pillars enabled an exploratory approach grounded in a hybrid methodology. Drawing conclusions from this method, the dossier analysis developed here could serve purposes beyond academic inquiry. With adequate institutional support and a more robust entity recognition system, these databases could become valuable tools for cultural management, career development, funding allocation, and the articulation of multistakeholder support networks. Such an approach is particularly relevant in contexts where traditional economic indicators fall short and a deeper, more integrated understanding is required. Future studies are recommended to explore the interactions between data-driven profiles and broader narratives within international platforms.

There is no fixed pattern or formula for achieving recognition and prestige within the art world. However, there are identifiable commonalities, such as internationalization and participation in events like the Venice Biennale, that provide insight into how different artists reach that milestone.

Acknowledgments

None.

Funding

None.

Conflict of interest

The author declares no conflict of interest.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

The first version and extended version of this article were approved by the Ethics Committee of the International

Studies Institute of the University of Chile. No further approval was needed. The human subjects involved stated their consent verbally with full permission. There was no signed agreement since the interviews were used exclusively to corroborate publicly available data and contextual information already analyzed through other sources.

Consent for publication

Interviewees gave verbal consent on the publication of their data.

Availability of data

Data used in this study can be obtained from publicly available artist portfolios, including:

(i) https://www.artistasvisualeschilenos.cl/658/w3-channel.html
(ii) https://danieltemplon.com
(iii) https://lucianabritogaleria.com.br
(iv) https://galleryhyundai.com
(v) https://alfredojaar.net
(vi) https://www.goodman-gallery.com
(vii) https://fernandoprats.cl
(viii) https://www.galeriajoanprats.com/es
(ix) https://www.mor-charpentier.com/es
(x) http://www.pazerrazuriz.com
(xi) https://www.galeriapready.cl
(xii) https://artishockrevista.com
(xiii) https://www.voluspajarpa.com

Further disclosure

Part of the findings will be presented at the Association for Cultural Economics International Conference on Cultural Economics on June 24, 2025. This article is adapted from the author's master's thesis, submitted in 2023 to the University of Chile. Some results and conclusions have been revised and updated for this submission.

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Arts & Communication

ARTICLE

The random brush reimagined: Artificial intelligence-generated calligraphy, embodied perception, and cultural resonance

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(This article belongs to the *Special Issue: Communicating Sustainability Values Through Art: Theories & Practices*)

Abstract

In recent years, artificial intelligence (AI) has increasingly intersected with traditional art forms, introducing new modes of creativity that challenge established esthetic frameworks while expanding the boundaries of artistic expression. Against this backdrop, this study explores the transformative role of AI-generated randomness in Chinese calligraphy, an art form deeply rooted in the philosophical ideals of harmony and balance derived from Confucianism, Daoism, and Buddhism. By leveraging models like Stable Diffusion, AI infuses unpredictable elements into calligraphic creation, challenging established esthetic norms while unlocking novel artistic possibilities. Employing a cross-case comparative and textual analysis approach, this research examines visual-semantic contrasts between representative traditional scripts and AI-generated works, while also investigating the historical evolution of calligraphic esthetics, cultural practices, and cross-cultural reception. The findings reveal that such technological interventions enhance the global accessibility of calligraphy, resonate with younger audiences, expand its dimension of expression, and redefine human engagement with the art form. Results indicate that AI not only democratizes calligraphy but may also stimulate public interest in, and a deeper understanding of, traditional techniques and cultural depth. This study advocates for a dynamic balance between cultural heritage preservation and technological innovation, proposing AI as a cultural gateway to traditional practice, and calls for further exploration of its global cultural implications.

Keywords: Artificial intelligence-generated calligraphy; Embodied practice; Randomness in art; Cultural resonance; Esthetic innovation

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Citation: Wang K, Yu D. The random brush reimagined: Artificial intelligence-generated calligraphy, embodied perception, and cultural resonance. *Arts & Communication*. 2026;4(1):025170030. doi: 10.36922/AC025170030

Received: April 26, 2025

1st revised: September 11, 2025

2nd revised: September 23, 2025

Accepted: October 13, 2025

Published online: October 31, 2025

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Publisher's Note: AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

1.1. Research background and significance

The emergence of digital technology has had a significant impact on handwritten calligraphy, and Chinese character calligraphy is facing a similar situation. Chatting software and emails have become essential in daily life. The aphorisms, such as "the handwriting reflects the person" and "seeing the handwriting is like seeing the person,"

have become symbolic expressions of a bygone era. We can communicate with numerous people and perform multiple tasks simultaneously. However, the advanced techniques of handwritten Chinese calligraphy, which demand prolonged practice and patience to master, are increasingly incompatible with the accelerated rhythms of contemporary life and are gradually being marginalized.[1] At the same time, the appearance of design software has also made calligraphy creation different from the past. Artificial intelligence (AI)-generated fonts can replicate handwritten Chinese calligraphy with considerable accuracy, and lay audiences often struggle to distinguish between an artist's original work and digital imitations.[2] Coupled with the shift in taste, this ancient form of creation, full of artistic and philosophical ideas, is facing a serious predicament.[3]

However, AI might flip the script. Take CallifusionV2[1], an AI-driven calligraphic generation model developed for this study, as an example: It rethinks the calligraphy of each Chinese character and introduces variations that offer each work a unique visual effect, unlike the old rules of planned strokes.[4] These AI tools enable broader access to calligraphy without any basic calligraphy knowledge. One can now experience digital calligraphy performances of brush art anytime and anywhere, dismantling long-standing limitations.[5] Instead of killing tradition, these tools may catalyze its revitalization.

Integrating advanced virtual reality (VR) is expanding the way of calligraphy teaching and learning. Based on the immersive environment provided by VR, learners can obtain all the details needed to improve calligraphy writing skills by experiencing the tactile issues, such as stroke movement, ink blending, and paper texture. The possibilities of reshaping calligraphy education are revealed by addressing the gap in current VR applications to transmit these subtle tactile signals, improving tactile gloves, and integrating force feedback technology.[6] Exploring how VR applications address these kinds of challenges facilitate the formation of new teaching concepts and global cross-cultural cooperation rather than protecting calligraphy. Meanwhile, the use of Metaverse Intelligent Education Technology (MIET) in calligraphy learning can improve students' learning interest, motivation, and cultural engagement.[7]

Through the vivid learning environment constructed by MIET, learners can watch and control the writing tool through an immersive experience. The entire learning process improves the accuracy of knowledge construction by inspiring the motivation and interest of learners. For the next generation, the integration of technology and traditional calligraphy not only protects cultural heritage but also adapts modern instructional methods.[8] Thus, the vision of MIET in relation to calligraphy education is expansive.

Furthermore, the value of touch feedback in the teaching process is proven by checking VR methods for real calligraphy training. AI-powered haptic gloves and wearable tools can provide flexible feedback and produce quick, custom details in focus tracking, interest, and skills, enhancing the realism and pedagogical effectiveness of the learning environment.[9] These VR-based methods address the challenges of sharing tactile input, offering new avenues for the preservation and development of classical calligraphy. These steps in VR methods can address the challenges of sharing touch input and create new paths for the protection and growth of traditional calligraphy.

However, it is crucial to recognize that traditional calligraphy is not merely a visual or decorative art form. Its deep cultural core and enduring value lie in the coherent unity of "body–mind–work"—a practice rooted in Confucian ideals of self-cultivation (修身, *xiushen*) and Daoist notions of embodying the Dao (体道, *tidao*). This embodied practice stands in essential contrast to AI-generated calligraphy: while the latter produces images through algorithmic parameter learning, traditional calligraphy unfolds as a holistic process from bodily perception (force, emotion, breath) to brush-and-ink expression and ultimately, cultural transmission.

This distinction is not a rejection of AI, but rather a clarification of two fundamentally different modes of creation and meaning-making. It allows us to define their respective roles more precisely: AI functions as an innovative extension medium for calligraphy, while the embodied practice remains the core foundation of its cultural ontology. Recognizing this boundary is essential for exploring, in a nuanced way, how technology can revitalize calligraphic art without diluting its cultural depth—the central aim of this study.

1.2. Research objectives and core problem statement

Amidst the backdrop of capitalization and the evolution of AI, intelligent productivity has become a new driving force for social development. As one of the oldest carriers of philosophical expression, Chinese calligraphy is transforming its informational and esthetic dimensions. Diffusion models introduce algorithmic randomness into calligraphic abstraction, disrupting long-standing principles of harmony, balance, and predictability of change—a shift documented in recent studies on generative

[1] CallifusionV2: A custom AI model for generative calligraphy, developed by the authors using Stable Diffusion architecture and trained on 10,000 high-resolution calligraphic samples.

esthetics.[5] This unpredictability has been shown to alter the perception and emotional engagement of viewers with traditional art forms,[10] including calligraphy.

Building on these technological developments and the conceptual distinction between the embodied practice of traditional calligraphy and the algorithmic generation of AI, this study seeks to explore how digital innovation can coexist with cultural continuity, rather than displace it. Rather than treating AI as a replacement for human creativity, we position it as an innovative extension medium—a technological conduit that, through visual novelty and broad accessibility, may paradoxically redirect attention toward the bodily discipline and philosophical depth of traditional calligraphy. Therefore, this study investigates how algorithmic randomness challenges established visual norms in composition, stroke dynamics, and stylistic coherence, while simultaneously generating novel esthetic experiences in a digitally connected era. It further examines how these AI-generated works influence emotional resonance and cognitive interpretation, particularly among younger, tech-savvy audiences who may encounter calligraphy for the first time through digital interfaces.

At its core, this study asks how AI can stimulate renewed cultural engagement without reducing calligraphy to mere digital imagery. It explores the conditions under which technological intervention might not erode, but instead amplify awareness of the body-mind-work continuum—the Confucian ideal of self-cultivation and Daoist notion of embodying the Dao—that defines the art's cultural ontology. To this end, we also propose design strategies for integrating elements of embodied practice, such as recorded brushwork movements, breath-synchronized writing, or the transmission of vital energy (气, *qi*), into AI calligraphy applications, ensuring that the sensory and spiritual dimensions of the tradition remain legible in digital form. Ultimately, this work aims to establish a balanced framework in which technical experimentation and cultural fidelity are not opposing forces, but interdependent vectors in the evolution of an ancient art form.[11] By examining the interplay between algorithmic unpredictability and cultural memory, we seek to understand how the random brush might, against expectation, deepen our connection to tradition in the age of AI.

1.3. Structure of the study

By focusing on the impact of randomness in AI-generated Chinese calligraphy, this study employed a wide range of strategies to assess its historical, psychological, and cross-cultural aspects. The study began by examining the history of calligraphy esthetics, reconsidering established guiding principles, while checking the current impact of virtual technologies and AI on esthetic perception. The study compared Eastern and Western perceptions of AI-generated calligraphy, showing the interactions between psycho-emotional responses, social context, and randomness, and highlighted the nuances of cross-cultural communication. This study also offered a complex perspective that proved how AI-generated calligraphy both enriches and challenges existing esthetic norms. Finally, the study provided key findings, proposing future directions that aim to deepen our understanding of AI-generated art in the global social mosaic, ultimately illuminating the dynamic interactions between social expression, creativity, and technology.

2. Historical evolution of calligraphy esthetics

2.1. Esthetic traditions in Chinese calligraphy

Chinese calligraphy has a long history, and its esthetics have also evolved with the historical context, humanistic environment, ideological movements, and other social factors of each era, demonstrating unique philosophical concepts and artistic values belonging to that era. Four prominent styles—valuing imagery (尚象, *shangxiang*), valuing charm (尚韵, *shangyun*), valuing rules (尚法, *shangfa*), and valuing meaning (尚意, *shangyi*)—have significantly shaped its development.

2.1.1. Shangxiang esthetics

Shangxiang is an important component of the *Book of Changes*. It presents an abstract and symbolic Oracle Bone Inscriptions, which are highly generalized after people observe the nature, heaven, and earth. These textual symbols are often associated with nature, totems, and worship. These textual symbols are often associated with nature, totems, and worship. In the hands of ancient calligraphers, they spread in twists and turns, vividly imitating the surrounding world and meeting the needs of daily functions, such as the characters for mountain (山, *shan*) and water (水, *shui*). Each individual has their own unique personality, which showcases the simple and beautiful artistic quality of the original text.[12]

2.1.2. Shangyun esthetics

Zhuangzi philosophy is centered around the concept of "the way of heaven is in accordance with nature," and was deeply influenced by the Wei and Jin dynasties. They believed that art should conform to the laws of nature, and all objective expressions should be natural. Subjectivity should conform to objectivity and return to nature.[13] Therefore, in Wang Xizhi's masterpiece *Lan Ting Xu* (Preface to the Poems Composed at the Orchid Pavilion), we can see a slowing rhythm, a consistent use of the center tip of the

brush, and an expansive sense of three-dimensional space in writing. The Wei and Jin people exuded a calm, elegant, and transcendent aura on paper.[14]

2.1.3. Shangfa esthetics

The creation of regular script in the Tang Dynasty reached its historical peak. The norms and rules of calligraphy in the Tang Dynasty were closely related to the imperial examinations of that era. For each character, the strokes should be well-proportioned, and the structural center of gravity should be stable. At the same time, to avoid monotony, one needs to adjust the tight–loose relationship between the strokes and the space to achieve visual balance. Ouyang Xun's *Thirty-six Methods of Character Structure* was a masterpiece in this regard. It is also a highly influential work in the history of Chinese calligraphy. Even today, it remains a standard textbook for the writing of Chinese characters.

2.1.4. Shangyi esthetics

In the Song Dynasty, the literati became the primary force on the political stage. The social concept was open-minded, and the social environment was relaxed. Artists had unprecedented creative space and ideological patterns. The free-spirited and unrestrained style of running and cursive scripts became the core of creation at that time. Su Shi's calligraphy featured a flat-shaped character with slightly thicker vertical strokes, while Huang Tingjian's calligraphy had a character shape leaning toward an irregular trapezoid, with long and slanted strokes. These two artists commented on each other's character shapes as "a toad crushed by a stone" and "a dead snake hanging on a tree" respectively. Evidently, the calligraphy style emphasizing artistic conception can actually be regarded as a form of self-entertainment among the literati group. With the primary purpose of expressing personal sentiments and unique temperaments, it was a breakthrough from the rigid traditions. This also made the Northern Song Dynasty a glorious and remarkable era in the history of Chinese calligraphy.[15]

After that, during the Yuan and Ming Dynasties, people started to imitate the calligraphers of the Jin Dynasty again. The renowned calligrapher Zhao Mengfu advocated changing the form of characters in line with the times while following the traditional brushwork of the ancients. This became the golden rule for calligraphy learners in later generations.

These esthetic characteristics may seem independent of one another, but they are interrelated. In each dynasty, several works transcended the norms of their time. Take Yan Zhenqing in the Tang Dynasty as an example. His regular script was highly regulated and strict in form, while his running and cursive scripts, shaped by his integrity and straightforwardness, more vividly manifested the feature of "advocating artistic conception." These traditional esthetics, through generations of inheritance, have highlighted the adaptability and expressiveness of Chinese calligraphy, enabling it to remain relevant across different cultural epochs.

2.2. Cultural connotations of calligraphy

Chinese calligraphy is deeply intertwined with the philosophies of Confucianism, Daoism, and Buddhism, serving as a cultural symbol and moral tool.

2.2.1. Confucian influence

Confucianism emphasizes internal self-reflection and self-moral restraint. It applies "rites" to regulate the behavior of each individual and endeavors to build a harmonious, balanced, and stable society. When this philosophical concept is integrated with art, the act of writing itself becomes a method to cultivate the mind, calm the spirit, and enhance inner stability, as fully demonstrated in the structural esthetic of regular script in the Tang Dynasty, an era that emphasized regulations. Therefore, for calligraphy, Confucianism aligns with the teachings of self-discipline and moral cultivation. As a result, both regular script and Confucianism were esteemed as the official orthodox criteria for judgment.

2.2.2. Daoist influence

Daoism regards the way of nature and following the laws of the origin and existence of all things as its educational purpose. Artists who believe in Laozi and Zhuangzi believe that pure nature, free from the constraints of experience and knowledge, and based solely on intuition and self-perception, is the beauty of creation. Therefore, a masterpiece often features smooth and completely unrestrained lines. At the same time, it can showcase strength and momentum through variations in the thickness, weight, and length of the strokes, and express the emotions and temperament of the author. For example, Zhang Xu or Huai Su, whose chaotic and harmonious lines are highly ornamental, and even the content of their works is dramatic. For example, the work *Belly Pain Postscript* is a mocking note written during abdominal pain, which demonstrates the principle of "inaction" in Daoism.[16]

2.2.3. Buddhist influence

Stele-inscribed Buddhist scriptures and Zen calligraphy ink marks are particularly important parts of Buddhist culture, and they have also played a huge role in the inheritance and promotion of calligraphy. Today, three

thousand years after the development of calligraphy, copying, and even copying from memory the *Preface to the Great Tang Sanzang Holy Teachings* (a calligraphy copybook that describes the journey of Tripitaka Master in obtaining Buddhist scriptures and related information about the scriptures) compiled by Monk Huairen, which took 24 years to complete with a reward of a thousand gold for each character of Wang Xizhi's calligraphy, is still a necessary path for all calligraphy learners. This was the lifelong wish of Emperor Li Shimin of the Tang Dynasty, leaving an invaluable treasure for future generations. Throughout the entire process of copying and memorizing, the writer naturally completes a spiritual practice and endows the written words with a religious sense of sanctity.

In the Song Dynasty, scholars were fond of discussing the profound principles of Zen. They tried to integrate these Buddhist concepts into the artistic conception of their poems, lyrics, and calligraphy. Su Shi and Huang Tingjian mentioned above were examples. They believed that one must first understand the methods, but not be constrained by them. Only by mastering and transcending traditional methods can one achieve an unrestrained artistic conception and essence. This ideology had a significant impact on the formation of the *shangyi* calligraphy style in the Song Dynasty, and the high-level integration of art and spirit was vividly demonstrated here.[17]

Calligraphy writing as a shared sign means that, more than its deep roots, it functions as a shared symbol, demonstrating good rules and creative style. The saying "the style is the person" sums up how calligraphy writing shows the writer's way of being and good traits. Furthermore, words on buildings and plates, written in calligraphy, remain as lasting signs of shared and past identity, boosting their place as a group work.

These shared meanings lift Chinese calligraphy writing beyond just an art form—it functions as a lively path for deep thinking, good teaching, and shared memory.

2.3. Evolution of calligraphic tools and techniques

The evolution of Chinese calligraphy reflects a rich interplay between esthetic core tenets and technological breakthroughs in artistic tools and techniques. Traditional calligraphy relies on four fundamental elements: (i) Brushes (毛笔, *maobi*), which is made by mixing various animal hairs, and due to differences in elasticity, it can create lines with strikingly different visual effects when writing; (ii) Ink (墨, *mo*), when the ink stick is mixed and ground with water on the inkstone, it can form ink with uneven color. Combined with the structure of the brush, it can produce multiple ink colors, commonly known as "ink divided into five colors"; (iii) Specialized paper (纸, *zhi*), can be divided into raw Xuan paper, treated Xuan paper, and semi-treated Xuan paper according to their water absorption differences. It is used as a key writing medium to cooperate with the writer in creating unique personal works; (iv) The inkstone (砚, *yan*), during the grinding process of the ink ingot, the flatness of the inkstone directly affects the final effect of ink color. Each of these tools contributes distinctively to the calligrapher's artistic expression, with their individual qualities and interactions determining the visual and tactile outcome of the artwork, thus highlighting how the technical components of calligraphy are as important as the esthetic principles guiding the artist's hand.

The techniques of Chinese calligraphy consist of three parts: Brushwork, character structure, and composition. Brushwork is closely related to the birth and development of the writing brush. Starting from the rough craftsmanship in the early days, such as "the bamboo tube" brush, to the refined and delicate ones later, such as "the mouse whisker" brush, the evolution of the writing brush directly led to a transformation in the appearance of characters. From the rough and less variable strokes of oracle bone inscriptions, bronze inscriptions, and seal scripts, it shifted to the delicate and smooth running and cursive scripts. Character structure refers to the center of gravity, appearance, and spatial proportion relationships of the character. "Calculating the black based on the white" is a very important technique point, and its variations depend on differences in eras and creators. For example, compared with the character forms in the Song Dynasty, those in the Tang Dynasty had more regular structures, with relatively compact and well-proportioned spatial blank arrangements. In contrast, the character forms in the Song Dynasty were more flexible and changeable, and the blank space designs were also diverse. The same goes for the method of composition. From the evenly spaced arrangements in the early years to the more spontaneous changes in later generations, composition, through generations of inheritance and innovation, has become more characteristic of the times, more vivid, and more mature. This highlights an important concept: the equipment and technical elements of calligraphy are just as important as the esthetic principles that guide artists' creations.

The area of new calligraphy writing is known for its fusion of traditional methods and innovative high-tech ideas, where computer technology and AI significantly transform the art-making process. Computer systems and smart programs, such as Stable Diffusion (SD), have made calligraphy writing more accessible to people by introducing new ways for anyone to try and new ways to be creative, pushing against traditional art rules and expanding the scope of creative work.

Today's calligraphy writing groups now incorporate new methods that integrate traditional techniques with different supplies, computer spaces, and ideas from diverse sources, showing a global art world that values both old traditions and new ideas. These growing steps utilize computers to create layered, hands-on experiences that view calligraphy writing in new ways, introducing elements of moving pictures, computer-based changes, and computer-generated art while still adhering to the deep thinking and beauty rules of the traditional art style.

By combining traditional methods and new ideas, new calligraphy writing navigates a complex field that respects group customs while still changing with new computer tools, maintaining its strong impact and life in a growingly connected and online world.

3. Modern esthetic psychology and changes in Stable Diffusion calligraphy

3.1. Trends in modern esthetic psychology

The advent of digital technology has significantly transformed esthetic psychology, continuously enhancing the diversity and personalization of art appreciation. Audiences who have grown up in the modern art environment, apart from seeking "pleasure to the ears and eyes" from artworks, also expect to perceive certain implications within the esthetic images, that is, "pleasure to the heart and mind." Ultimately, the audience's aim is to achieve "pleasure to the will and spirit," meaning reaching a psychological resonance with their life ideals, generating a sense of pleasure, and attaining satisfaction in the spiritual realm.[18] Therefore, in the process of seeking satisfaction for both psychological feelings and the soul, people pursue a more unique taste in artworks. They take experiences that align with their personal preferences and cultural backgrounds as the criteria for appreciation.[19] This transformation is vividly demonstrated in the integration of AI into art. Works generated by AI also offer new forms of expression that challenge traditional esthetics.[20]

What follows is a dazzling diversity of changes in the field of art appreciation, as well as a continuously increasing degree of personalization. In the context of globalization, people's self-awareness has gradually awakened, and their identification with their own subjectivity has also increased. Everyone is striving for unique, customized experiences that resonate with their personal preferences and cultural backgrounds.[19] This shift is evident in the process of integrating AI into art. The AI-generated works not only provide a new form of expression that challenges traditional esthetics but also fully satisfy people's sense of self-creation.[20] As viewers engage with the generative process—not just the final image—they become attuned to the rhythm, timing, and flow of virtual brushstrokes, which mirrors the embodied discipline of traditional practice.[21] This participatory perception may, in turn, guide audiences toward a deeper understanding of Confucian self-cultivation and Daoist embodying the Dao through the reactivation of the "writing–perceiving" continuum, offering a more integrated cultural experience.[22]

In the digital environment we live in today, various cutting-edge technologies converge and blend together, opening a new door to art for humanity. The visual impact and emotional resonance people experience through interactive and immersive experiences are unprecedented. AI technology, based on this environment, has created works that are more vibrant and artistically appealing. These works not only attract audiences from multiple sensory levels but also form deeper emotional connections with viewers.[23] For example, AI-generated calligraphy can add unpredictable random variations to the work based on the algorithm's random parameters. The lines formed during the variation process naturally become some abstract elements in the work. Their existence transcends conventional understanding, bringing a new interpretation to traditional forms, triggering diverse and rich emotional responses.[5]

3.2. Mechanism of esthetic reshaping via Stable Diffusion calligraphy

The SD model is a specialized algorithm that does not blindly create chaos. By fine-tuning various strictly set parameters, the model completes stroke writing based on the preset probability distribution in the model library, encompassing the initiation, execution, and conclusion of strokes, transitions, the interconnection between strokes, as well as the variation in stroke thickness, line direction, speed, ink density, and other highly professional writing techniques. This controllable randomness generates and drives the entire process of innovative design, playing a pivotal role in reshaping Chinese calligraphy esthetics.

3.2.1. Role of randomness in altering traditional norms

Traditional Chinese calligraphy follows numerous established norms, emphasizing balance, harmony, inheritance, intentionality, and creativity. However, through the integration of random elements into the SD model, traditional calligraphy has been deconstructed and reconstructed in terms of stroke shape, ink distribution, and structural composition, with even the stroke order changing. As a result, AI-generated calligraphy works are distinctly different from the traditional ones, retaining the traditional charm of pen and ink while challenging traditional writing norms, creating new dynamics and

visual tension. This new visual order's beauty not only challenges traditional norms but also stimulates creativity due to its deliberate randomness, giving birth to a unique style that deviates from traditional forms, expanding the esthetic vision of this art in a comprehensive and deeper way.[5]

These images illustrate how algorithmic randomness can enhance the visual appeal and emotional resonance of calligraphic works.

Figure 1, composed of three works (uses the Zhao Mengfu running regular script font library as a diffusion model), exhibits significant variation in the initial stroke formation—specifically at the entry points—employing exposed tip (露锋, *lufeng*), concealed tip (藏锋, *cangfeng*), and side-tip (侧锋, *cefeng*) writing. These variations appear deliberately crafted, suggesting intentional esthetic diversity. Furthermore, overlapping strokes generate unpredictable ink blending effects, creating a fluid and naturalistic quality that evokes the Daoist principle of non-action (无为, *wuwei*)—spontaneity arising from effortless execution.

Figure 2 illustrates three-character phrases, using the same model as Figure 1. Beyond subtle variations in stroke turns, these works embody essential characteristics of running script (行书, *xingshu*), including dynamic contrasts in density, rhythm, and tonal weight—alternating between light and heavy, fast and slow. The compositions maintain structural stability while featuring rich gradations in ink tone, effectively conveying the rhythmic flow of calligraphy and reflecting the calm, meditative state required in traditional practice. These qualities make the works particularly engaging for contemporary audiences.

The four images in Figure 3 were generated using the same model as those in Figures 1 and 2, but with different diffusion parameter values during training, resulting in a more successful integration of traditional brushwork with AI-generated elements. In this series, certain strokes exhibit a "wet ink" visual effect, with clearly layered ink tonality and an ample use of "intentional emptiness" (deliberately designed blank areas in calligraphy). Visually, the works suggest steady, powerful brush movements—controlled and well-balanced—conveying strength without chaos, and dynamism without loss of restraint. The final works thus achieve both strong visual impact and profound emotional resonance. Collectively, these cases demonstrate that algorithmic randomness, when thoughtfully integrated, not only enriches the esthetic experience of calligraphy but also opens new pathways for cognitive and emotional engagement with this traditional art form.

However, not all applications of randomness in AI-generated calligraphy achieve the desired esthetic effect. The following examples (Figures 4 and 5) illustrate some of the challenges and limitations inherent in integrating



Figure 1. Three generated calligraphic renderings of the Chinese character of purple (紫, *zi*), produced using a diffusion model fine-tuned on the Zhao Mengfu running-regular script dataset, illustrating variations in stroke initiation styles. Image generated by the authors using Stable Diffusion.



Figure 2. Three generated calligraphic phrases using the same diffusion model as Figure 1, illustrating dynamic rhythm and tonal variation characteristic of running script (行书, *xingshu*). Image generated by the authors using Stable Diffusion.



Figure 3. Four generated calligraphic images using the same diffusion model as Figures 1 and 2, showing wet-ink effects, layered tonality, and deliberate intentional emptiness. Image generated by the authors using Stable Diffusion.

algorithmic randomness into traditional calligraphic practice.

Figure 4, which utilizes the Deng Shiru seal script font library as a diffusion model, consists of two series. The work on the left exhibits excessive ink diffusion, with strokes and structure lacking coherence. For instance, a sudden flying white (intentional ink breakage; 飞白, *feibai*) appears in the downward-left stroke (撇, *pie*) at the lower-left corner, seemingly arbitrary rather than expressive. On the right, the right half of the composition suffers from erroneous strokes generated by random diffusion during model training, resulting in a chaotic structure and inconsistent brushwork. As a result, viewers struggle to visually interpret the artist's or system's creative intent. This overemphasis on randomness ultimately undermines the work's esthetic appeal and emotional resonance.

Figure 5, which uses the Jin Nong clerical script font library as a diffusion model, presents a set of works produced when the SD model did not undergo sufficient diffusion during training. As shown, these characters exhibit features typical of printed typefaces—such as uniform neatness, consistent stroke thickness, and geometric rigidity. Some strokes display rough, hasty dragging or sweeping marks at the beginning or end due to random noise, while others consist only of outline contours without authentic ink texture. These visual inconsistencies create an emotional disconnect from the intended artistic qualities, such as "organic variation," "simplicity," "stability," "fluidity," "rich ink gradation," or "five-colors-of-ink" (a traditional esthetic referring to subtle tonal shifts). This chaotic visual experience fails to elicit the intended cognitive and emotional responses, risks cultural misinterpretation, and raises deeper questions about how randomness can be meaningfully aligned with visual coherence to meet audiences' affective and perceptual expectations.



Figure 4. Two series generated with a Deng Shiru seal script diffusion model, showing incoherent strokes and chaotic structure due to excessive and random ink diffusion. Image generated by the authors using Stable Diffusion.



Figure 5. Calligraphic images generated with a Jin Nong clerical script diffusion model with limited training diffusion, exhibiting uniform, rigid strokes and minimal ink texture. Image generated by the authors using Stable Diffusion.

Collectively, these cases underscore the necessity of balancing algorithmic randomness and established esthetic principles in AI-assisted calligraphy. Only through such calibration can harmonious, expressive, and culturally resonant works be achieved.

Consider the following examples (Figures 6 and 7). These figures demonstrate how randomness can transform calligraphy into abstract art, even if the characters themselves are meaningless. The two works in Figure 6 demonstrate how chaotic ink diffusion and unconventional stroke patterns create a visually striking and evocative abstract composition. This result is derived from random variations applied to a model of Huang Tingjian's running regular script, which exhibits certain stroke and character shape characteristics, despite lacking clear semantic meaning. Similarly, the series in Figure 7 showcases two works that originate from random variations applied to Jin Nong's clerical script model. Variations in stroke thickness and ink



Figure 6. Two works generated using a Huang Tingjian running-regular script diffusion model under random variations, producing abstract compositions with chaotic ink diffusion and unconventional stroke patterns. Image generated by the authors using Stable Diffusion.



Figure 7. Two works generated with a Jin Nong clerical script diffusion model under random variations, yielding stylized abstract forms with varied stroke thickness and ink distribution. Image generated by the authors using Stable Diffusion.

distribution lead to esthetically pleasing, stylized abstract forms that possess a sense of convention, even though they do not convey specific messages. These examples highlight how randomness expands the boundaries of traditional calligraphy into the realm of abstract art, offering new esthetic experiences that challenge established standards.

3.2.2. Tools facilitating calligraphy randomness

Advanced generative control tools, such as ControlNet and specialized small models, have significantly enhanced the controllability and creativity of random elements in AI-generated calligraphy. ControlNet enables precise adjustment of similarity between generated outputs and reference images, allowing fine-grained guidance over stroke direction, structural composition, and stylistic features. This empowers artists to introduce algorithmically driven variations while preserving the fundamental conventions of calligraphy, thereby achieving an effect of "unexpectedness within control."[24] Furthermore, small models trained on diverse datasets of historical calligraphic works can integrate visual vocabularies across different schools and dynastic periods, generating subtle and novel formal variations. This algorithmically induced "unintentional creativity" not only enriches the artistic expressiveness of AI-generated calligraphy but also offers viewers a new pathway to re-engage with core esthetic principles of traditional practice—such as "the brush follows emotion" (笔随气动, *bisuiqidong*) and "vital rhythm and dynamic life" (气韵生动, *qiyunshengdong*). By contrasting the machine's "atypical brush intent" with the human writer's "emotional rhythm," these generated works can, paradoxically, highlight the cultural distinctiveness of traditional calligraphy. Such technical integration thus imbues models like SD with deeper artistic exploratory potential, expanding the horizon of creative possibilities for calligraphy in the digital age.[25]

3.2.3. Mathematical representation of esthetic randomness

The process of generating esthetically pleasing randomness in SD calligraphy can be represented mathematically, as shown in Equation (1).

$$C = \sum_{i=1}^{n} \left(P_i \cdot R_i \right) + \in \quad (1)$$

where:

- C_{output}: Final calligraphy composition
- P_i: Predefined esthetic parameters (e.g., stroke weight, ink density)
- *Ri*: Random variables introduced by SD algorithms
- $\in$: Controlled noise for stylistic variation.

This formula encapsulates the interplay between traditional constraints (P_i) and modern randomness (R_i) in creating innovative calligraphy, reflecting the integration of predefined esthetic parameters—such as stroke weight and ink density—with algorithmically generated variations. It signifies not a replacement of calligraphy's cultural core—the embodied practice of writing—but rather a technological relearning and reconfiguration of its visual characteristics.

3.3. Comparative analysis with traditional calligraphy

To comprehensively explore the cognitive and emotional dimensions of calligraphy, comparative analysis revealed the different characteristics between traditional and AI-generated methods (SD). Traditional calligraphy attracts audiences through precise technical expression, exquisite artistic techniques, and persistent adherence to established esthetic principles, evoking emotional responses rooted in cultural and philosophical depth, such as openness and reverence. In contrast, SD calligraphy introduces a paradigm shift by utilizing randomness and technological innovation, creating a more dynamic audience experience characterized by unpredictability, curiosity, and intellectual stimulation.

The provided figures (Figures 1-3) are exemplary cases of visual innovation in AI-generated calligraphy within the context of a paradigm shift. Traditional calligraphy emphasizes precision in brushwork and ink application, as well as the intentionality behind writing, often evoking esthetic responses, such as "elegance," "leisurely spontaneity," and "composure." In contrast, these AI-generated works expand the perceptual dimensions of calligraphic art through algorithmically driven unpredictability and formal novelty. The three works in Figure 1 employ fluid ink diffusion effects that break conventional stroke logic, prompting viewers to interpret the works from non-traditional perspectives, thereby stimulating cognitive engagement and esthetic reflection at a rational level. The three works in Figure 2 create contrasts of density and openness—hallmarks of running script—through variations in ink intensity and rhythmic tension between the upper and lower characters, engaging viewers in a more direct and visceral manner. Figure 3 seamlessly integrates the brush techniques of running script, including variations in pressure, speed, and rhythm during execution, with abstract visual elements, resulting in visually striking artworks that challenge established boundaries of traditional calligraphy and may evoke a range of complex emotional responses—from excitement and curiosity to momentary confusion.

The visual characteristics generated by random mechanisms in these examples, such as the blending of ink colors and variations in brush strokes, not only demonstrate the innovative potential of AI in the formal expression of calligraphy but also make it an effective visual carrier for the cross-cultural transmission of traditional calligraphy. For Western audiences, these works can serve as a "perceptual entry point" into the esthetics of calligraphy, allowing them to initially experience its visual impact while gradually building an understanding of deeper cultural cores (such as the flow of vital energy and concepts like "intention precedes the brush"), thereby laying a cognitive foundation for further in-depth exploration of the embodied practices and philosophical implications of traditional calligraphy.[22]

3.4. Implications for calligraphy education and appreciation

Traditional calligraphy invites people to engage in contemplative appreciation of the inheritance of techniques and the historical background of calligraphy. In contrast, AI-generated (SD) calligraphy prompts the audience to actively interpret and engage with artworks that break conventional expectations, potentially evoking a wider range of emotional responses, from excitement and curiosity to momentary confusion. This comparative examination highlights the dynamic character of artistic perception, demonstrating how technological intervention can fundamentally transform the cognitive and emotional interaction between people and artistic expression, blurring the boundaries between human creativity and algorithm-generated works.

The figures provided (Figures 6 and 7) serve as examples of this paradigm shift. Traditional calligraphy places emphasis on the lineage of renowned masters and the inheritance of techniques. People develop a sense of admiration and emotional connection toward calligraphy works due to the familiarity they evoke and the exceptional craftsmanship demonstrated. In contrast, the AI-generated calligraphy in these figures introduces elements of unpredictability and curiosity that can transform the art form into abstract art. The two images in Figure 6 create visually striking and expressive abstract compositions through chaotic ink diffusion, embodying stylistic characteristics of Huang Tingjian, despite lacking clear semantic content. The two works in Figure 7 form esthetically pleasing clerical script forms in the style of Jin Nong, shaped by variations in stroke thickness and ink distribution, even though they convey no specific message. These examples illustrate how randomness can extend the boundaries of traditional calligraphy into the realm of abstract art, offering novel esthetic experiences that challenge established artistic standards.

These cases clearly demonstrate that the randomness in AI-generated calligraphy can expand the boundaries of traditional calligraphy from "text-based art" into the domain of "abstract visual art." On one hand, it breaks down traditional barriers in cross-cultural communication by offering non-linguistic visual impact; on the other hand, it provocatively challenges the long-held assumption that "calligraphy must be legible." However, it must be emphasized that the core value of such abstraction lies not in replacement but in serving as a cognitive bridge for cross-cultural transmission.[25] To prevent cultural superficiality due to semantic loss, these AI-generated works should be accompanied by contextual interpretation—such as embedded videos of master calligraphers' brush movements, or explanations of techniques like flying white as natural outcomes of embodied writing practices. This enables audiences to move beyond formal appreciation toward a deeper understanding of the bodily and philosophical foundations of traditional calligraphy.[26]

4. Interactive effects of randomness, culture, and cognition

4.1. Cultural connotations as bridges

Audience familiarity with traditional calligraphic esthetics serves as a vital bridge in the acceptance of SD-generated calligraphy. Traditional esthetics, deeply rooted in cultural and philosophical traditions, provide a framework through which viewers interpret and appreciate new forms of artistic expression.[27] For example, the visual elements in the calligraphy works generated by SD, such as the connection of aura, delicate changes in starting and ending strokes, and transitions, as well as changes in ink color, all connect with the creative principles of Wang Xizhi's *Lan Ting Xu* and other classic works, facilitating audience engagement and acceptance.[5]

Randomness in SD-generated calligraphy introduces novel visual elements that evoke diverse cognitive and emotional responses. For instance, the random blending of ink creates unexpected patterns, ranging from thick to light, dry to wet, tight to loose, stimulating the audience's curiosity and imagination in exploring the inner philosophy or emotions of the work, prompting them to interpret it in a unique way. This process aligns with research on visual complexity in calligraphy, which suggests that moderate complexity and novelty can enhance audience engagement in the appreciation of art.[28] In SD calligraphy works, the random diffusion of ink color creates a moderately complex visual object for the viewer, including ink color, brushwork, lines, and abstract shapes. This ensures that the viewer does not feel bored due to the esthetic object being too easy to understand, nor does it experience cognitive

pressure due to being too far from their esthetic experience. They are also greatly attracted by the differences between these works and those in their experience, and are eager to explore the details and creative motivations that make these works distinct from the past.

However, Figures 4 and 5 serve as examples demonstrating the limitations that arise when the randomness of algorithms fails to harmonize well with traditional esthetic principles. In Figure 4, the random diffusion based on the Deng Shiru clerical script font leads to excessive ink blending, disrupting the compositional balance and creating a chaotic visual effect. This not only fails to evoke curiosity and imagination among viewers but also imposes a sense of oppression, hindering their understanding of the work. The disordered diffusion of ink breaks the structural integrity of the characters, failing to reflect the classical elegance and rhythmic quality characteristic of Deng Shiru's calligraphy. Similarly, Figure 5, generated from the Jin Nong clerical script font, suffers from uneven or insufficient diffusion during its creation, leading to an imbalance in artistic expression and chaotic ink distribution. The strokes appear disjointed and mechanically rigid, lacking the texture and intentional artistry found in Jin Nong's original calligraphy. The features, such as abrupt fractures, the arbitrary use of flying white effects, and strokes that are merely outlines without any ink texture, further exacerbate the visual confusion. These elements do not enhance the expressiveness of the work but rather weaken its esthetic coherence and emotional resonance. These cases illustrate that the overuse or improper application of randomness can damage the formal integrity and cultural readability of AI-generated calligraphy works. They highlight the importance of integrating algorithmic transformations with profound esthetic values—not to stifle innovation, but to ensure that randomness serves the expressive intent. The ultimate goal is to create works that are not only visually harmonious but also meaningful and engaging on cultural and emotional levels.

4.2. Impact on calligraphy heritage and innovation

The introduction of randomness into SD-generated calligraphy has broadened engagement with the art form, making it more accessible to a wide range of audiences. Once regarded as an exclusive discipline that demanded years of dedication, calligraphy has been revitalized through AI, allowing greater involvement and interest.[29]

4.2.1. Democratizing calligraphy appreciation

With the help of AI-based tools, people who have not received deep training in traditional calligraphy can still explore its core esthetic elements. Randomness plays a key role in this influence, as people can adjust the parameters of ControlNet to create visually striking works with rich ink color variations, clear styles, and distinct personalities based on their basic graphics, catering to the requirements of modern esthetics—combining multiple cultural experiences with high-tech means, and efficiently and conveniently expressing their independence and uniqueness. The vibrant and bold visual impact in the work is formed by the strong contrast of stroke thickness and the irregular blending of ink, directly and clearly expressing the inner language of those social people who crave breakthroughs and pursue freedom, especially popular among young audiences.

4.2.2. Bidirectional empowerment and creative cultivation

Randomness has proven essential in attracting younger audiences and inspiring artistic exploration. Platforms, such as SD, allow users to reconfigure the spatial structure of traditional calligraphic strokes in novel ways, while simultaneously engaging with the contemporary esthetic of art-technology integration.[1] As calligraphy becomes increasingly embedded in digital media and modern design, it is not enough to merely leverage "low-threshold visual creation" to spark initial interest. Instead, there is a critical need to guide young creators from AI-generated experimentation toward embodied traditional practice. Initiatives, such as "AI generation + hand copying" workshops—where youth first generate compositional drafts using AI and then manually replicate them with brush and ink—enable a tactile understanding of stroke dynamics, ink control, and cultural resonance. This hybrid approach not only exemplifies the deep integration of tradition and innovation but also reflects the joy new generations derive from cultural synthesis. While experiencing the timeless allure of this artistic heritage, they actively incorporate personal creativity, thereby strengthening their sense of cultural belonging and identity.[6]

Moreover, AI technologies can support the digital preservation of calligraphy's embodied practices. By capturing master calligraphers' brush movement data and constructing a relational database linking technique, emotional expression, and cultural context—a brush technique (笔法, *bifa*)-emotion-culture framework—AI systems gain more culturally grounded training data, while invaluable records of traditional craftsmanship are preserved for future inheritance (传承, *chuancheng*). This establishes a virtuous cycle of "tradition nourishing technology, technology enriching tradition"—a model of true bidirectional empowerment.

Consequently, SD-generated calligraphy both preserves traditional artistic values and stimulates new modes of

creativity, helping the art form remain relevant in a shifting cultural landscape. By welcoming fresh audiences and expanding its scope, calligraphy continues to evolve as an expression of both art and cultural identity.

4.3. Cultural influences on perception

Examining the cultural contexts of AI-based (SD) calligraphy highlights the multi-level intersection of perception, interpretation, and emotional engagement, with different interpretations between Eastern and Western cultures. In most parts of the East, especially in China, calligraphy is associated with philosophical systems, such as Confucianism, Daoism, and Buddhism. These philosophical systems guide the audience on how to interpret the randomness of the algorithm through concepts, such as non-action.[30] This approach integrates technological innovation with philosophical resonance, resulting in profound cultural experiences. Meanwhile, Western audiences tend to adopt a more formalistic perspective, focusing on visual expression, creativity, esthetic exploration, and creative process, which provide them with a unique cognitive and emotional resonance for such works.[31] The unpredictability of SD calligraphy poses a challenge to the traditional artistic style and pattern recognition, prompting the Oriental audience to seek coordination and unity between novel changes and established traditions, while the Western audience is more inclined to accept the new dimensions and concepts brought by multiculturalism and interpret the works with an open and rational attitude.[28] Although there are cultural differences between the East and the West, due to the common esthetic principles of human beings' innate visual attraction, such as balance, unity, rhythm, and proportion, the vague sense of cultural differences in SD calligraphy works is more conducive to the establishment of cross-cultural ties. As a mixed art form, SD calligraphy has become a dynamic medium, combining classic cultural heritage with modern technology-driven innovation methods, which can especially arouse the resonance of the younger generation who seek the value and significance connection between the past and the present.[29,31]

4.4. Case studies and examples

AI-produced (SD) calligraphy showcased in exhibitions like "Eternal Ink" and in series such as "Random Harmony" underscores the profound potential of harnessing technological innovation to transcend cultural divides through artistic means. These pioneering examples demonstrate how randomness paired with digital intervention can yield shared esthetic experiences that both respect established artistic principles and push creative limits. By fusing precise calligraphic techniques with spontaneous AI-driven variations, artists like Li Wei create compositions that resonate widely—drawing Eastern viewers who appreciate philosophical and historical authenticity, as well as Western viewers attracted by novel esthetics and inventive experimentation.

In SD calligraphy, which integrates cutting-edge technology and traditional art, randomness, cultural influence, and cognitive factors interact to create a multidimensional innovation environment with great vitality for the development of art and educational progress, and provide great possibilities for the further development of traditional art in the future. Cross-cultural cooperation in this cultural environment has great potential. It can enable artists, educators, and scholars from different fields to collaborate, absorb inspiration from each other, and jointly explore new creative paths beyond the limitations of traditional art.[32] However, potential problems, such as cultural misunderstandings and technical barriers between these fields, must also be addressed.[33] Strengthening education courses and using multilingual interpretation tools can mitigate the negative impact of these challenges and significantly enhance people's in-depth understanding of the cultural significance behind SD calligraphy by providing key background information.[34] If these obstacles can be overcome, this high-tech, innovative medium can become a powerful bridge for international cultural exchanges, and create a good opportunity to expand new horizons of art, promote multicultural exchanges and understanding, and promote the prosperity and development of global culture and art through the imaginative integration of art and technology.[35]

5. Cross-cultural esthetics and cognitive emotion

5.1. A comparative framework of Eastern and Western perceptions of Stable Diffusion calligraphy esthetics

5.1.1. Divergent philosophical foundations and esthetic criteria

When appreciating calligraphy works generated by SD, Eastern and Western audiences employ fundamentally distinct conceptual frameworks rooted in divergent philosophical traditions—differences that shape not only esthetic evaluation, but also the perceived roles of AI in cultural transmission, artistic innovation, and intercultural dialogue. In the East, calligraphy is understood as a spiritual practice grounded in Confucian, Daoist, and Buddhist thought, where the principle of the unity of heaven and man (天人合一, *tianrenheyi*)—derived from Zhuangzi—posits that the artist's inner state, cultivated through lifelong discipline of self-cultivation, manifests directly in

brushwork.[10] Each stroke embodies vital energy, rhythm, and moral integrity, forming a holistic convergence of body, mind, and nature. Formal elements, such as flying white and intentional emptiness (留白, *liubai*), are interpreted as expressions of breath, emotion, and cosmic resonance.

In contrast, we initially hypothesized that Western audiences—shaped by Greco rational traditions emphasizing logic, individual agency, and conceptual inquiry[36]—would be more inclined to embrace AI-generated art, particularly works produced through algorithmic and mathematical processes. We expected them to focus on formal innovation, visual novelty, and critical reflections on technology, analyzing several elements, such as line direction, texture, and spatial composition, and probing the artist's intentions regarding futurity or human-machine relations.

However, survey findings reveal that this assumption does not fully hold when applied to an art form deeply rooted in philosophical and cultural traditions, such as calligraphy. Western attitudes toward AI in this context are notably divided: only 40% supports its use in calligraphy education, 40% remain skeptical, and 20% outright oppose it. This suggests that Western audiences do not automatically accept AI's artistic legitimacy simply due to its technological basis. On the contrary, precisely due to their strong orientation toward logical reasoning, they place greater emphasis on the motivation, cultural provenance, and mechanisms of meaning-making behind the work.[36] For instance, in esthetic evaluations, only 30% of English-language respondents mentioned core Eastern concepts, such as "harmony" or "balance." Instead, 70% emphasized "innovation," "experimentation," and "conceptual depth," indicating a tendency to engage with unfamiliar artistic expressions through critical and intellectual frameworks.

In contrast, respondents from East and Southeast Asia—including students from China, Japan, Korea, and Malaysia—demonstrated a foundational understanding of calligraphy's visual language, with as many as 80% identifying "harmony" and "balance" as key esthetic criteria.[24] This divergence highlights a significant opportunity: While AI-generated calligraphy challenges traditional brush-based practice, it also opens a new pathway for cross-cultural dialogue. By visually manifesting features that are difficult to achieve manually—such as flying white, dry brush (枯笔, *kubi*), and dynamic ink diffusion—AI works can serve as perceptual catalysts. When combined with multimodal interpretive strategies—such as annotated explanations, VR simulations of brush movement, or guided narratives on Daoist and Confucian esthetics[10]—these approaches have been shown to enhance intercultural comprehension.[38] In this way, AI-generated calligraphy can help Western audiences move beyond purely technical critique and gradually access the deeper dimensions of calligraphic practice, including breath rhythm, intentional emptiness, and the philosophical ideal of the unity of heaven and human.[10] Thus, far from being merely a technological experiment, AI-generated calligraphy emerges as a meaningful bridge for fostering deeper cross-cultural understanding of Eastern visual esthetics and cultural essence.

5.1.2. Generational shifts within Eastern audiences

A significant intergenerational divide exists within Eastern societies. Older practitioners, trained in classical calligraphy, emphasize the embodied discipline of brushwork—where breath control, wrist pressure, and rhythmic movement form an inseparable triad of bodily perception, expression, and cultural transmission. They view algorithmic randomness as bypassing decades of somatic training, reducing creation to a mechanistic process from data to parameters, and ultimately the output, and question whether AI-generated works can truly possess spirit resonance (神韵, *shenyun*) or transmit cultural essence.[1]

However, younger generations—digital natives—interpret randomness not as a deficiency but as expressive expansion. Our survey shows that 90% of East and Southeast Asian students believe that AI can help "popularize calligraphy among youth," and 80% support its integration into art curricula, provided it complements traditional practice. Notably, 65% find the "dynamic ink diffusion" and "unpredictable line flow" of SD-generated works esthetically compelling. More importantly, 60% reported that their initial fascination with AI-generated styles led them to study classical techniques, such as "traces of leaking roof" brushwork (屋漏痕, *wulouhen*) or the philosophical roots of self-cultivation. This suggests that AI functions not as a replacement for tradition, but as a cultural on-ramp—a digital invitation to return to heritage.

5.1.3. Cultural interpretive challenges for Western audiences

When encountering AI-generated calligraphy, such as that produced by SD, Western audiences often struggle to interpret its esthetic and cultural meanings due to limited familiarity with Chinese calligraphic traditions.[24] This challenge arises not only from differing esthetic sensibilities but also from fundamental contrasts in writing systems. In the Western alphabetic tradition, writing emphasizes clarity and visual continuity, where gaps or broken strokes are typically seen as mistakes. As one English-speaking respondent admitted: "I saw the gaps as errors, not as intentional emptiness."[XX(pYY)] Effects like flying white—

the deliberate ink breakage that creates dynamic tension between presence and absence—are thus often misread as technical flaws rather than expressive choices rooted in Daoist and artistic principles.[10]

Yet AI-generated calligraphy disrupts these assumptions. Because AI does not follow human motor constraints, it produces unexpected visual forms—such as fragmented lines, uneven ink diffusion, and stark contrasts between fullness and void—that challenge conventional expectations. These features, difficult to achieve in traditional practice, become a cognitive turning point: Viewers begin to recognize that incompleteness may be intentional. When paired with embedded cultural strategies—such as multilingual annotations, VR simulations of brush movement, or narrative guides that explain intentional emptiness as breath and mental space[38]—AI works can serve as gateways to Eastern esthetics. Rather than erasing cultural depth, AI, when contextualized, enables a deeper cross-cultural understanding by inviting audiences to reconsider the meaning of form, silence, and emptiness.[22]

5.2. Opportunities and challenges in cross-cultural communication

The appreciation of AI-generated calligraphy, particularly works produced through models like SD, cannot be divorced from the deep cultural and philosophical frameworks that underpin traditional Chinese calligraphy. In Chinese Calligraphy as a Cultural Practice, calligraphy is far more than a visual art form—it is a disciplined bodily practice rooted in Confucian ideals of self-cultivation and the Daoist principle of the unity of heaven and man.[26] Each stroke embodies vital energy, rhythm, and moral integrity, emerging from a somatic triad of breath, wrist control, and mental focus. This embodied understanding shapes how Eastern audiences interpret even algorithmically generated works: features, such as flying white or intentional emptiness, are not merely formal elements, but expressions of emotional dynamics and spiritual resonance.[25]

However, when these works are encountered by Western audiences—whose esthetic frameworks are often shaped by Greco rational traditions emphasizing conceptual innovation and visual novelty—such symbolic layers risk being overlooked. Without contextual grounding, the rhythmic complexity and intentional emptiness in calligraphy may be misread as randomness or compositional deficiency, especially in cross-cultural exhibitions.[25] This interpretive gap underscores the need for culturally sensitive presentation strategies that do not assume shared hermeneutic frameworks.

In response, emerging scholarship suggests that AI-generated calligraphy may serve not as a replacement for tradition, but as a bridge to it. Digital heritage technologies, including AI, can function as tools for cultural continuity, particularly among younger generations who may lack direct exposure to classical training.[22] Their research demonstrates that AI-generated styles can spark curiosity and serve as a "digital on-ramp" to traditional practice—aligning with survey findings that indicate 60% of students who engaged with SD-generated calligraphy later sought to study classical techniques (Table 1).

Yet, the integration of AI into cultural education remains contested. While Eastern audiences generally support its use in pedagogy—provided it complements, rather than replaces, embodied practice—Western respondents exhibit greater skepticism, with 40% expressing doubt and 20% outright opposition to its role in art education (Table 1). This divergence echoes some research's original insight:

Table 1. Comparative analysis of Eastern and Western perceptions of Stable Diffusion calligraphy esthetics

Aspect	Eastern perspective	Western perspective
Philosophical foundation	Rooted in the unity of heaven and man (天人合一, *tianrenheyi*), Confucian harmony, and self-cultivation (修身, *xiushen*)[10]	Guided by Greco rational ideals: logic, individual agency, and conceptual inquiry[36]
Artistic evaluation criteria	Values embodied practice, brush rhythm, and symbolic forms (e.g., flying white [飞白, *feibai*], intentional emptiness [留白, *liubai*]) as expressions of inner state[36]	Emphasizes visual novelty, formal innovation, and conceptual depth (e.g., tech critique, futurity); 70%[a] of English-speaking respondents highlighted these over traditional esthetics.[36] Only 30%[a] recognized "harmony" or "balance" as core values[24]
Interpretation of randomness	Older: sees as bypassing somatic training; questions vital energy (气, qi) Youth: views as expressive expansion[22]	Often perceives randomness as a form of artistic experimentation and freedom[36]
Role of technology	Must serve tradition; AI should complement human intention and cultural continuity[1]	Embraced as a tool for breakthroughs and boundary-pushing[36]
Preferred application domain	Art education (90%)[a], cultural transmission (80%)[a]	Commercial design (70%)[a], conceptual art (60%)[a]
Attitude toward AI in education	Supportive (80%)[a], but insists on integration with traditional practice	Mixed: 40%[a] support, 40%[a] skeptical, 20%[a] oppose

Note: [a]Data sources: Author-conducted surveys (2025), *n*=144 (105 students from East and Southeast Asia, 39 Western-background respondents).
Abbreviation: AI: Artificial intelligence.

calligraphy's value lies not only in its visual outcome, but in the lifelong discipline and moral cultivation it demands.[21] Any effort to globalize AI-generated calligraphy must therefore move beyond technological spectacle and engage seriously with these philosophical undercurrents.

To foster genuine cross-cultural appreciation, institutions should develop multilingual interpretive frameworks that explain not just what is seen, but why it matters. Even small interventions—such as curated annotation cards explaining flying white as a deliberate expression of breath and emotional tension—can significantly enhance viewer comprehension.[25] When combined with immersive digital platforms and pedagogical models that position AI as a dialogic partner rather than an autonomous creator, these strategies can help transform AI-generated calligraphy from a novelty into a meaningful site of intercultural dialogue.[22]

5.3. Esthetic perception and the esthetic dilemma of randomness

The introduction of algorithmic randomness in SD calligraphy brings both opportunities and challenges. Although it fosters novel esthetic expressions, its acceptance varies significantly between Eastern and Western audiences, as shown in Figures 4-7.

From an Eastern perspective—especially within a Confucian–Daoist framework—calligraphy should embody balance, rhythm, and spiritual resonance.[21] In Figure 4, excessive ink diffusion disrupts the harmony of the composition, failing to evoke the Daoist principle of non-action. It does not exhibit natural spontaneity but instead appears chaotic and aimless, preventing viewers from connecting with the work's philosophical depth. Similarly, Figure 5 displays rigid strokes that lack vitality and inconsistency in brushwork. Techniques, such as flying white, that symbolize breath and emotional tension in traditional practice seem arbitrary here, weakening the work's esthetic coherence and emotional resonance.

In contrast, Figures 6 and 7 demonstrate how controlled randomness can generate attractive abstract forms. Despite lacking semantic content, these works display strong formal beauty—dynamic compositions, visual rhythms, and texture contrasts—that appeal to audiences from diverse cultural backgrounds. Specifically, Figure 6 originates from the random diffusion of Huang Tingjian's regular script font library, creating a free-spirited yet symbolically meaningful abstract form; whereas Figure 7 is based on Jin Nong's clerical script font library, forming highly esthetically pleasing abstract forms through random variations. This suggests that abstract esthetics may serve as a universal introductory pathway, especially for Western audiences who prioritize visual innovation over symbolic meaning.[25]

Notably, generational differences further complicate acceptance. Older generations—regardless of Eastern or Western—often associate genuine calligraphy with physical skill of essence, energy, and spirit (精气神, *jingqishen*) and may find algorithmic randomness lacks intent. Younger generations, more accustomed to digital media and hybrid cultural forms, are more likely to view AI-generated works as legitimate creative expressions.[22] This generational gap highlights the necessity for differentiated dissemination strategies. Therefore, the key challenge lies not in eliminating randomness but in calibrating it—combining algorithmic variation with culturally resonant esthetic principles to create innovative and meaningful calligraphic works.

5.4. Dissemination strategies in bridging the esthetic gap

To address the core challenges outlined in Section 5.3—namely, uncontrolled randomness leading to potential cultural misinterpretations and purely abstract forms lacking depth—cross-cultural communication strategies must integrate cultural roots with technological innovation.

First, contextual interpretation is crucial. As seen in Figures 4 and 5, algorithmic effects, such as ink diffusion or flying white without cultural context support, are easily misunderstood. Therefore, multilingual interpretative materials, such as annotated digital exhibitions or augmented reality-driven "brushstroke analysis," which explain how specific visual features correspond to philosophical concepts, such as non-action and vital rhythm (气韵, *qiyun*),[6,37] are necessary. For example, the random diffusion results of Deng Shiru's clerical script model in Figure 4 and Jin Nong's clerical script model in Figure 5 require detailed cultural background introductions for correct interpretation. This transforms randomness from a technical product into a culturally readable expression. Second, tiered educational design can address generational differences. Projects targeting older audiences should emphasize continuity between AI works and traditional principles by juxtaposing masterpieces with SD outputs. For younger audiences, game-like VR experiences can enable them to co-create calligraphy with AI, understanding the integration of tradition and innovation in practice.[38] Third, curatorial positioning is essential. In global exhibitions, SD calligraphy should be presented not merely as Chinese art but as a form of dialogue—a conversation between human intention and algorithmic possibilities. Placing it within contemporary art or digital humanities contexts (rather than classical art

spaces) aligns with Western esthetic expectations while preserving cultural depth.[25] For instance, Figures 6 and 7 could be showcased in modern art exhibitions to highlight their abstract esthetics and cross-cultural potential.

Finally, collaborative creation platforms—such as AI-assisted calligraphy workshops or cross-cultural commentary forums—can promote mutual understanding. Inviting global participants to generate, annotate, and discuss SD calligraphy can transform passive viewing into active cross-cultural dialogue.[39] Participants might use Zhao Mengfu, Huang Tingjian's regular script font libraries, and Jin Nong's clerical script font library for creation, sharing their interpretations and feelings about these works.

These strategies do not aim to unify esthetic responses but rather to construct structured pathways for cross-cultural meaning-making. Through these methods, we can gain a deeper understanding and appreciation for the unique charm of AI-generated calligraphy, promoting its spread and acceptance worldwide.

6. Conclusion and outlook

6.1. Research summary

This study explored the transformative impact of randomness in SD-generated calligraphy on traditional esthetics, cognitive-emotional responses, and cross-cultural communication. Although randomness poses a challenge to the existing writing norms, writing guidelines, intentionality, and creative sources in Chinese calligraphy, it has emerged as a powerful driver of esthetic innovation and a means to engage a new generation of global audiences. By integrating randomness, SD-generated calligraphy not only stimulates curiosity, creativity, and emotional resonance but also redefines the modes of dissemination and popularization of calligraphic culture in contemporary society. Furthermore, it highlights the core value of traditional calligraphy as a culturally grounded art form, rooted in embodied practice, building a bridge between classical Chinese philosophy and contemporary digital art.[5,23]

In addition, the calligraphy generated by SD has become a cultural channel, integrating the foundation of Eastern philosophy with the praise of Western rational abstraction and innovative thinking, thus shortening the distance between cross-cultural audiences. It can make calligraphy more accessible to the public, which not only expands interest in traditional calligraphy among the young digital generation but also enables a global audience to quickly access this ancient and difficult calligraphy art through the network platform, and carry out convenient and effective artistic creation.[1,31] In this way, SD calligraphy not only protects this world cultural heritage that has been inherited for thousands of years but also breaks down language and cultural barriers and redefines its significance and value in the modern social environment.

6.2. Implications for calligraphy preservation and innovation

The combination of AI and random elements in calligraphy undoubtedly opens up a new path for safeguarding and reimagining this ancient art. While respecting the basic esthetic traditions of calligraphy, AI cleverly integrates and expands calligraphy with modern technology, striving to quickly adapt to modern and future global audiences. By combining the rich concepts and exquisite techniques of classic calligraphy with advanced technology, this method not only upholds the continuity of millennium culture but also opens up an unprecedented path for innovative experimentation in this traditional art. Intentionally integrating randomness and AI-based methods into the creative process can prevent calligraphy from stagnating or remaining in museums. Through the massive learning provided by AI, a continuous stream of creative inspiration can help creators reshape calligraphy as a dynamic and constantly developing art practice that combines modern high-tech social processes and resonates with audiences from different generations and cultural backgrounds. This forward-looking strategy has promoted the popularization of calligraphy, a small art form. Through the interactive digital platform that stimulates creativity and critical thinking, different cultural groups can find and participate in the appreciation and creation of calligraphy, ensuring that calligraphy remains important and vibrant in the rapidly digitalized global environment. The integration of AI and algorithmic randomness in calligraphic creation opens a new pathway for the contemporary preservation and innovative development of this ancient art. By respecting its fundamental esthetic principles and philosophical depth, this approach leverages AI technologies to transcend traditional media and creative constraints, enabling calligraphy to better respond to modern esthetic expectations and cross-cultural communication challenges. Rather than replacing humanistic values with technology, this fusion controls randomness to inspire new artistic possibilities—allowing calligraphy to maintain cultural continuity while gaining adaptive vitality for the future.

This practice can be understood as a co-evolution between the carrier and cultural essence. Here, AI-generated calligraphy serves as the carrier, facilitating formal exploration and expanded dissemination, while the embodied practices, symbolic imagery, and spiritual

dimensions of traditional calligraphy constitute the irreducible cultural essence. On one hand, algorithmically driven randomness helps break free from formulaic reproduction and prevents the art from becoming static or museum-bound. On the other hand, only when grounded in this cultural essence can technological innovation remain meaningful, avoiding superficial or fragmented visual pastiche. It is precisely within this dynamic tension that calligraphy transforms from passive preservation into active cultural regeneration.

This forward-looking collaborative strategy not only promotes broader participation in calligraphic creation but also fosters engagement through interactive digital platforms that stimulate creativity and critical thinking. It enables audiences across generations and cultural backgrounds to participate in both the appreciation and production of calligraphy, allowing younger users to experience its contemporary vitality through technological innovation, while helping cross-cultural audiences gradually grasp its deeper esthetic and philosophical values through visual reexpression and contextual interpretation. In this process, technology becomes more than a tool; it acts as a bridge connecting tradition with the present, as well as the local with the global communities. Ultimately, this approach ensures that calligraphy, within the rapidly evolving digital landscape, maintains the core significance of its cultural essence while continuously renewing its artistic vitality, realizing the living transmission and dynamic evolution of cultural heritage.

6.3. Future research directions

Although relevant research and creation have made continuous progress, a significant gap remains in the comprehensive understanding of how SD-generated calligraphy affects cross-cultural esthetics and the emotional response mechanism. To address these deficiencies, future research should adopt empirical methods and combine cutting-edge technologies to provide solutions.

6.3.1. Empirical cross-cultural studies

At present, the cognition of SD calligraphy from a cross-cultural perspective is largely derived from qualitative data. To obtain a more comprehensive view, follow-up research should combine quantitative techniques, such as eye tracking, emotion analysis, questionnaire surveys, and comparative discussions, to explore how audiences with different cultural backgrounds can participate in and interpret calligraphy works generated by SD.[18] In addition, a comparative study of intergenerational differences in a specific cultural environment will also provide more in-depth insights.[27]

6.3.2. Esthetic measurement methods

Researchers also urgently need to establish a strong measurement framework to measure the impact of randomness in SD calligraphy on cognition and emotion. Even an in-depth study of the observation results of brain activity during the process of esthetic experience in the field of neuroscience may reveal key information on how randomness shapes perception and emotional response.[10,23]

6.3.3. Expanding the Stable Diffusion model's capacity

The future improvement of the SD model should focus on fine customization, allowing users to control randomness by specifying parameters. The extended model adopts the style details and cultural elements of traditional calligraphy as the basic standard. It should not only strengthen the connection between the SD model and historical art forms, but also strive to achieve a new interpretation of art.[5] In addition, integrating multimodal features, such as interactive components or auditory elements, can deepen user participation and enhance the emotional and esthetic effects of SD-based calligraphy.

Through in-depth exploration of these research directions, researchers will rapidly strengthen the integration mechanism of high-tech and traditional art in the future, while deepening our understanding and closely integrating it with education, creation, and display, and promote it rapidly, so as to ensure Chinese calligraphy continues its esthetic value and innovative vitality for thousands of years from a global perspective.

6.4. Practical applications and recommendations

In an era of global multicultural exchange, ensuring that Chinese calligraphy maintains its cultural significance and continues to evolve on the world stage requires a multidimensional strategy that integrates technological innovation, educational development, and cross-cultural collaboration. By systematically incorporating AI-generated calligraphy into art and cultural studies curricula, this traditional art form can be made more accessible and relevant to contemporary learners. Simultaneously, the development of interactive digital platforms—equipped with intuitive tools for creation, simulation, and feedback—can lower barriers to artistic participation, enabling broader public engagement beyond specialized training. Organizing dynamic cultural exhibitions and public programs that vividly illustrate the interplay between traditional techniques and technological advancement allows calligraphy to transcend geographical and cultural boundaries, reasserting its vitality as a living art form in the digital age.

In educational practice, a dual-track approach is crucial to balance technological integration with cultural continuity. On one hand, AI tools can be leveraged to spark interest, provide stylistic exploration, and support creative experimentation, particularly among younger audiences. On the other hand, mandatory traditional calligraphy practice—such as regular hand-copying exercises—must remain a core component of learning, reinforcing the embodied skills of brush control, rhythm, and meditative focus that define the art's cultural essence. This helps prevent the misconception that AI can fully replace manual practice. Furthermore, in public exhibitions or digital displays featuring AI-generated calligraphy, clear labeling should be used to distinguish between AI-generated works and hand-crafted works. Such transparency supports accurate cultural interpretation and enables audiences to better understand the distinct values and processes behind each mode of creation.

At a systemic level, these initiatives should contribute to the development of an inclusive and sustainable cultural ecosystem. This ecosystem should prioritize immersive, participatory experiences that invite collaboration among artists, students, and enthusiasts across age groups, professions, and cultural backgrounds. By encouraging interdisciplinary perspectives—from design and technology to philosophy and esthetics—Chinese calligraphy can be reinterpreted and reconstructed as a dynamic medium of global artistic expression. Rather than remaining a niche tradition, it can become a bridge between diverse esthetic and technological domains, fostering mutual understanding, creative innovation, and intercultural dialogue. In this way, calligraphy not only preserves its cultural depth but also evolves as a vital, responsive, and universally engaging art form in the digital era.

6.5. Final thoughts

Encouraging broad participation in the fields of art, academia, and technology is crucial for reshaping calligraphy for future generations. When people from diverse backgrounds—whether computer scientists, traditional artists, or cultural historians—come together to explore and reinterpret this millennia-old art form, they open up new creative dimensions for its future evolution and provide a broader space for experimentation. This innovative collaboration fosters fresh insights: Technological tools expand the possibilities of esthetic expression, while ancient traditional techniques impart profound depth and cultural heritage to the works. By creating an intercultural and geographical environment that allows creative collaboration to flourish, calligraphy can evolve from its long-standing roots into a vibrant, boundary-breaking global art form of expression. This innovative model not only effectively bridges cultural differences but also propels calligraphy art toward unexpected innovative fields, ultimately connecting traditional culture with modern technology. It fosters a comprehensive and deep mutual understanding while also generating profound esthetic interactions.

When randomness was integrated into the generation of Chinese calligraphy, a hallmark moment in the development of this art form, it brought about a monumental transformation. Traditional calligraphy upholds precise and rigorous techniques, representing a spiritual connection between philosophical culture and the emotions of the creator. However, the randomly integrated digital elements broke all existing barriers, expanding the innovative horizons of the digital elements with infinite possibilities. Each work created with the help of machine learning and algorithmic programs was endowed with a surprise, highlighting a new interactive relationship between the artist, tools, esthetic concepts, and the works created. This dual adherence to traditional inheritance and innovative experimentation has injected fresh blood into Chinese calligraphy, keeping it vibrant and significant in an era of rapid technological development. More importantly, it has created a platform for different cultures and disciplines to intersect, share, and develop together, thereby enriching the entire global art field. By embracing this new direction of artistic creation, practitioners and scholars have not only consolidated the profound and long-standing historical heritage of calligraphy but also promoted its continuous innovation through keen insight and bold action. This ensures that calligraphy, an artistic tradition that has endured for thousands of years, will maintain strong vitality and inspiration in future generations, helping it stride toward a more diverse, inclusive, and innovative global art field.

Acknowledgements

None.

Funding

This work was supported by the 2023 General Project of Shanghai Educational Science Research C2023262 Theoretical Construction and Exploratory Application Research of Educational Metauniverse. This study is a part of the 2023 Shanghai Key Curriculum Construction project on "Chinese Calligraphy Art."

Conflict of interest

The authors declare that they have no competing interests.

Author contributions

Conceptualization: Kai Wang
Investigation: Kai Wang
Methodology: Kai Wang
Visualization: Kai Wang
Writing–original draft: Kai Wang
Writing–review & editing: All authors

Ethics approval and consent to participate

This study was conducted in compliance with ethical standards for educational research. As it involved anonymous surveys with adult participants and no sensitive data, formal ethics approval was not required under our institutional guidelines. Informed consent was obtained from all participants before data collection.

Consent for publication

All participants provided informed consent for participation in the study. The data were collected and reported in an anonymous manner, with no individual identifiers used or published. Therefore, additional consent for publication is not required.

Availability of data

The datasets generated during the current study are available on reasonable request from the corresponding author.

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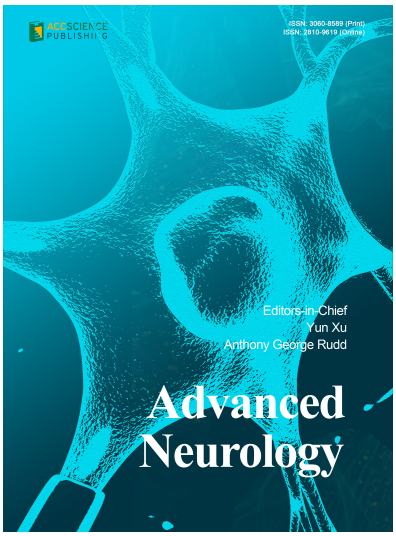
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