

Barriers to sustainable development in digital communication of intangible cultural heritage: emotion drain under the technology dominance

Jiayi Wang*

University of Warwick, Coventry, United British

Abstract. With the surge of digital tide, the digital use of intangible cultural heritage is increasingly common. In recent years, scholars have focused on digital technology as an important force in enabling the development of intangible cultural heritage communication. However, in specific practical explorations, the media characteristics of digital technology and the remote participation of inherited community and other drawbacks are constantly exposed, resulting in the conflict between technology dominance and emotion loss in the digitalisation of intangible cultural heritage. Therefore, there is a need to reflect on the technology dominance of digitisation of intangible cultural heritage and to analyse the causes and effects of emotion drain. The paper also attempts to further propose measures that respect the cultural subjectivity of the inheriting community and focus on the emotional impact of digitisation, aiming to better realise the sustainable development of digitisation of intangible cultural heritage.

1 Introduction

As technology advances by leaps and bounds, there has been an increased recognition by scholars and organisations that digital technologies can largely help to preserve and communicate the intangible cultural heritage of nations and countries. From previous face-to-face communication to today's use of technology to communicate across time and space, technological developments have heightened the need for the digitalisation of intangible cultural heritage. However, this concept has recently been challenged by some studies demonstrating that as technology gradually dominates, participants might engage more with technology than with intangible cultural heritage. This phenomenon tends to cut off the most direct human experience and feeling of intangible heritage culture, thus losing the emotion it conveys. In the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, United Nations Educational, Scientific and Cultural Organization defined intangible cultural heritage as having social and emotional significance that is passed down from generation to generation in addition to the cultural expression itself (UNESCO, 2003)¹⁹. Therefore, it may be said that protecting its emotional value is also a way of preserving the diversity and uniqueness of human civilisation.

In the pages that follow, it will be argued the advantages and disadvantages of technology in the digital transmission of intangible cultural heritage and then analysed the probable causes and effects of emotional loss under technology domination. Based on proposing

humanistic emotion as the core concept of communication, the aim of this paper is to explore the way in which to promote the sustainable development of the digital communication of intangible cultural heritage.

2 Advantages of digital technology

One of the advantages of being technology-driven is that it provides an efficient mode of preservation and presentation for the digital communication of intangible cultural heritage. Research in recent years has suggested that evolving 3D technologies have enabled significant progress in various digital intangible cultural heritage projects (Skublewska-Paszkowska et al., 2022)¹³.

For example, Rongdong Xie's study (2021)²² was based on VR virtual visualisation technology to construct an interactive virtual environment for 3D digital simulation models of Chinese Dai ceramic art. Through computer rendering and processing software, VR, an emerging technology that offers a human-computer interaction experience, restores the authenticity of Chinese Dai pottery while offering a panoramic 3D viewpoint visual experience in the digital scene generated. Through a computer interface, users may engage in interactive digital random browsing by entering the 3D display world of the digital Dai pottery.

This emerging technology is generally assumed to play a role in permanently storing intangible cultural heritage resources and enhancing the artistic effect of mobile displays (Sorea and Csesznek, 2020)¹⁴. Moreover, it obviously height the user's multi-sensory experience

* Corresponding author: wangjiayi0615@gmail.com

and depth of thought within the virtual space (Sang et al., 2018)¹², see Figure 1.

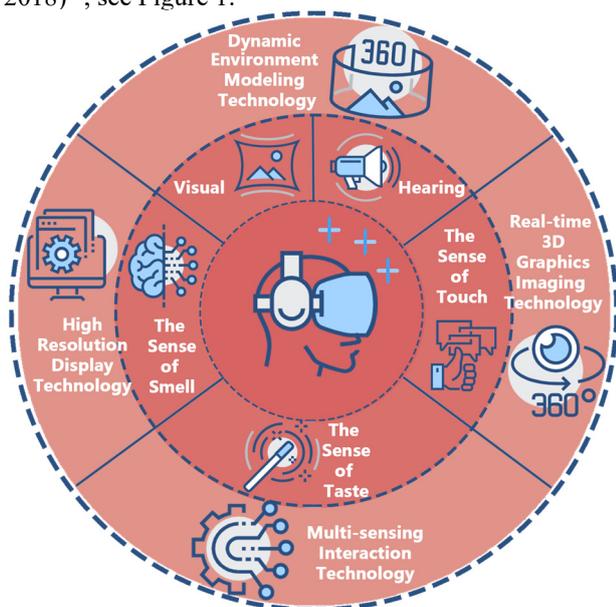


Figure 1 The realistic virtual world built by VR technology

The application of the five main features of VR experiences in the digitisation of intangible cultural heritage complements existing modes of presentation and communication, and provides new digital experience projects that are applicable to various domains within intangible cultural heritage. Figure 2 illustrates the characteristics of VR technology and VR experience projects applicable to the five major domains of intangible cultural heritage.

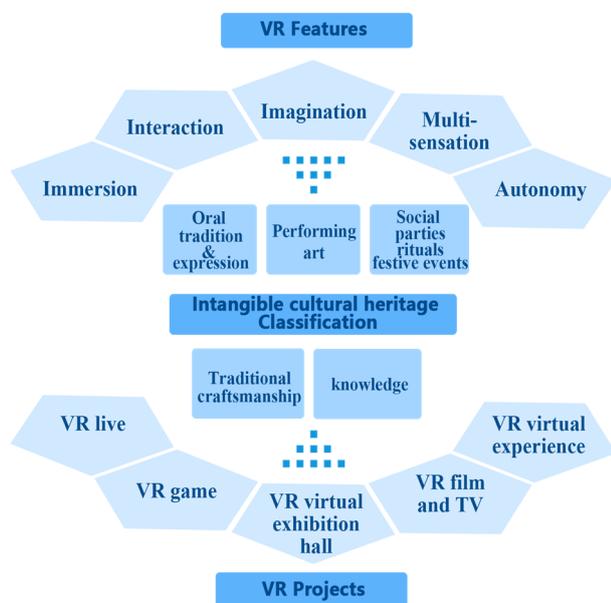


Figure 2 Applications of VR technology in intangible cultural heritage

The ambience and sense of space offered by conventional static displays are superior. However, they are inaccessible to visitors, and both exhibitors and visitors have to take into account the security of their exhibits and the time and financial expenses. By

comparison, Digital technologies completely illustrate the intangible cultural heritage features in a straightforward real-time interactive manner, improving mass communication's publicity, fluidity, and virtual reality (Xie, 2021)²².

In the more complex area of traditional folklore performing arts, the Terpsichore project's researchers (Ziagkas et al., 2019)²⁵ utilised the Vicon3D recording technology (Nexus Vicon, Oxford, UK) to recognise and catch two regionally specific traditional dances from Greece. They also improved the identification of subtle differences and the level of visual presentation through the data analysis of 3D kinematics. The "Syrtos Kalamatianos" and the "Syrtos Makedonikos" are two of the most popular folk dances throughout Greece and have the same rhythmic pattern. In their work to identify these two similar intangible cultural heritage traditional dances, they found that analysing the average displacement of the dancers' left toe reflex marker trajectories was a powerful tool.

It is a ground-breaking discovery that investigates various folklore performances in Europe. Furthermore, it subsequently supports numerous initiatives to preserve and present intangible cultural heritage by offering cost-efficient and semantically enhanced digital content of intangible traditional dances to various related industries and user groups. These positive results, therefore, seem to support further that digital technology, led by advanced information concepts, has continuously expanded the conservation and presentation of intangible cultural heritage into a higher dimensional digital space (Sang et al., 2018)¹².

Although it is almost certain that technology has dictated changes in the digital sphere, giving digital communication of intangible cultural heritage an increasingly high-tech power (e.g. augmented reality, virtual reality, artificial intelligence, blockchain) (Pérez-Seijo and Vicente, 2022)¹⁰, it has accordingly come to dominate the paradigm shift (Manovich, 2013)⁸ of digital intangible cultural heritage.

3 Disadvantages of technology: technological domination

The media imperative of technology in the digital transmission of intangible cultural heritage is constantly being amplified, leading to a tendency for digital technology to shift from technology-mediated to technology-led. Yang Gao (2020)²³ has argued that technology currently dominates intangible cultural heritage's digital production and dissemination, as it permeates the entire process from the collection and storage of intangible cultural heritage cultural elements to the design and dissemination of the displays.

The digitisation process of intangible cultural heritage can be divided into four stages: information collection, information storage, processing and dissemination, with each stage of intangible cultural heritage undergoing a different degree of digital transformation. Technicians frequently gather pieces of intangible cultural heritage from the regions where they originated and preserved

them primarily as audio-visual works and written materials through interviews and recordings. Then, they are digitally processed for a variety of uses, including the development of open and interactive intangible cultural heritage digital museums, online games, documentaries, movies, and industrial design goods. The ability to digitise, network, and virtualise of intangible cultural heritage elements being exploited are necessary for these goals. So that web-based dissemination and offline expansion into an industrial chain for industrial production and administration are made possible by these capabilities. The specific digitalization process is shown in Figure 3.

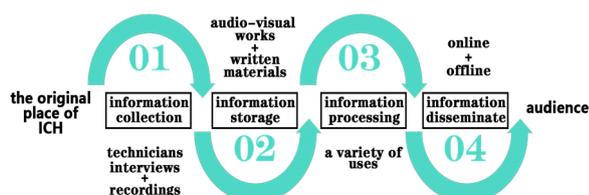


Figure 3 The digitisation process of intangible cultural heritage

An implication of this is the possibility that intangible cultural heritage elements need to be filtered, organised and reproduced by technology so that they can be digitally disseminated in the end, which creates a contradiction between technological dominance and cultural dominance in a given technical space. The single digital collection and storage, the processing and dissemination for another purpose, the technical teams that are not heirs, each of these links are mostly detached from and ignore the specific cultural spaces and groups of heirs on which intangible cultural heritage depends.

Similarly, Wang (2009)¹⁷ found that because of the inherent nature of technological means to re-present information texts, this allows technology to act as a medium that not only disseminates culture but also creates new forms of cultural texts.

Regarding communication theory, the media pessimists followed the Frankfurt School's critique of technological rationality (Meng, 2012)⁹. In his book 'Amusing Ourselves to Death', the American scholar Neil Postman has suggested that every medium reinvents cultural content. It provides a new orientation to the ways of thinking, and expressing ideas and emotions, thus creating unique semiotics of discourse.

The Canadian scholar Marshall McLuhan also calls the "medium-as-message" theory, in which he argues that the medium influences our habits of understanding and thinking. On this basis, the digital technology medium transposes "content" to various smart devices and concepts. Each person views it becomes a network interface in the information society, acting as a neural mediator in the ecological web of the information network.

Neil Postman (2011)¹¹, as a media pessimist, argued that media technology should be treated with deep caution and that every technological innovation is a product of both advantages and disadvantages. It can be said that in the process of digitizing intangible cultural heritage, even the same textual information has undergone a series of effects of decoding and encoding by technical teams, re-

creation effects by technical media and differential interpretation by end-users. It is also difficult to keep its original discourse power again.

In the Marxist theory of spatial studies, Henri Lefebvre considered the technical domination of a given space as an "abstract space with no substance of life, a solitary and closed space without interactive subjectivity or the possibility of interaction" (Liu, 2006)⁷. During the presentation of intangible cultural heritage, the space where the participant lives are no longer the outside space in which we typically live but rather a space intertwined with one or more technical methods and organically dominated by technology.

Thus, considering all of this evidence from various fields, it seems that the tendency towards technological dominance in the digital dissemination of intangible cultural heritage raises the question of touching the essence of intangible cultural heritage culture.

4 Technological dominance leads to emotional drain

Technological dominance has led to the loss of cultural sensibility in the digital communication of intangible cultural heritage. As intangible cultural heritage transitioned from being dominated by its native environment and inherited community to being overwhelmed by digital technology and technology users, it also became a technologically reproduced culture that could be stored forever and played back at any time (Wang, 2009)¹⁷. This means that under the domination of a specific technological space, digital intangible cultural heritage greatly loses its link to the original culture and its vitality and emotional value (Gao, 2020)²³.

For example, the performing arts of intangible cultural heritage, such as dance, song, drama, and gesture, rely on the ever-changing body language of the performer and the act of interaction with the audience to convey the emotions outwardly and cultural values contained therein. In turn, the performers activate their bodies and stimulate their emotions through live performance, again and again, conveying a sense of presence and gaining inner vitality to maintain their behaviour. These performative arts can be digitally recorded for mass distribution and cultural circulation, as the Figure 4 shows.

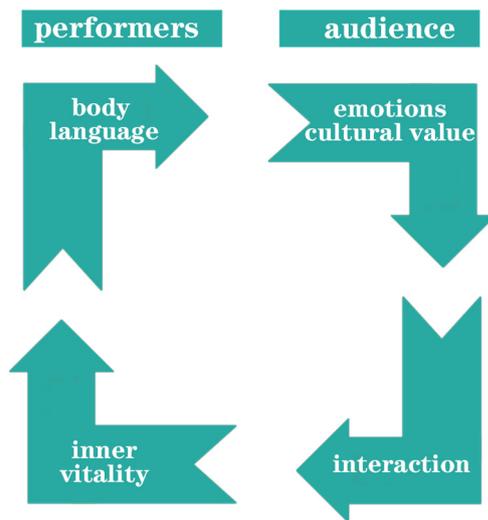


Figure 4 The interaction effect between the performers and audience

However, under the limitation of technical space and the dislocation of time and space, both audiences and performers lose the real interactive experience brought by the scene, which makes culture correspondingly lose its dynamic development.

Other scholars (Hou et al., 2022)⁴ have also found that some digital display technologies that reproduce intangible cultural heritage seem to emphasise surface forms and compositions more closely, ignoring their human connotations. For example, China's Wuhan "Han Show" theatre, currently China's highest investment tourist performing arts project, but because of the excessive worship of technology and the overuse of high technology, the cultural connotation of the stage show is insufficient, and the audience's sense of experience and emotional interaction with local traditional culture is not satisfied.

In this regard, Adorno has argued that the technology that dominates the discourse is, on the one hand, trying to conceal the contradictions between subject and object in society and culture. In modern capitalist societies, the cultural industry turns all works of art into commodities, replacing use-value with exchange-value. On the other hand, most people could appreciate mass-producing models of cultural products, solidifying ideas and emotions and stifling individuality, and ultimately submerging culture in increasingly elaborate technological forms, superficial aesthetic tastes, and fashionable consumer behaviour (Wang, 2009)¹⁷. It allows people to enjoy a pleasant cultural sensation while covertly manipulating their physical, mental, and even subconscious activities to repeatedly engage in the familiar and safe consumption of the same products.

As a result, in the face of technological bullying, it is increasingly difficult for people to feel the emotional impact of intangible cultural heritage, which often poses problems for developing digital intangible heritage products.

5 Emotional drain is detrimental to the sustainability of intangible cultural heritage

Emotional loss is not conducive to the sustainability of digital communication of intangible cultural heritage. This is still a source of debate, but the generally accepted theory is that the essence of intangible cultural heritage is a people-oriented living culture (Li et al., 2016)²⁴. It relies on the existence of people and has a unique way of transmitting continuity. It is handed down in verbal form and remembered in mind in life, passed on from generation to generation through the language and behaviour of people in a specific space and time. It is the accumulation and accumulation of the long-term life of the people of a region, reflecting a regional spiritual world, spiritual map, and values. It has a special humanistic significance for the communities and groups concerned, i.e., it provides them with the emotional value of 'identity and continuity. This emotional quality frequently transcends its aesthetics, artistry and other externally perceivable qualities and is a crucial motivation passed on and transmitted for generations.

Therefore, when intangible cultural heritage digital products are novel but not culturally emotive, it would not be easy to convey the cultural connotation to the outside world, thus resulting in cultural aphasia. Without cultural appeal, intangible cultural heritage products will conceivably not impress the viewers and potential inheritors (Fanzhuo et al., 2021)³, which might not favour the sustainable development of digital communication of intangible cultural heritage. Due to the uniqueness of intangible cultural heritage, their existence inevitably depends on the community of inheritors, without which there would be no intangible cultural heritage. In turn, the inheriting community is more concerned with intangible cultural heritage's spiritual and emotional values (Li, 2012)⁶.

In spite of the fact that digital technology is already being used in many places to preserve intangible cultural heritage, the inheritors of traditional crafts frequently lack the education necessary to comprehend the digital technology involved, as their level of education is usually not high. Besides, it is difficult for them to adapt to the fast pace of modern life. This often leads to a gradual loss of voice and participation in the digitisation of intangible cultural heritage by the community of heirs, which is detrimental to the digital dissemination of intangible cultural heritage.

According to scholars in Experimental Museology at the Swiss federal Institute of Technology in Lausanne (Hou et al., 2022)⁴ have found that, in contrast to tangible heritage, the manifestations of intangible cultural heritage are generally defined by specific human practices and that current digital tools might be doubted to make little effort to demonstrate the 'living' nature of intangible cultural heritage fully. Tangible cultural heritage generally refers to all traces of human activity in our physical environment, such as buildings, monuments, artworks, and natural heritage (Swensen et al., 2013)¹⁶. Physical displays are the primary method of displaying physical cultural

material and are typically seen in museum galleries (Wang, 2011)¹⁸. Traditional or digital static displays provide the spectator a face-to-face, even tactile, experience with their forms, colours, and features. This contributes to the materiality of tangible cultural heritage.

While intangible cultural heritage is a culture that 'lives' in a particular context, with characteristics such as vividness of performance, environmental originality, and territorial practice. They primarily include a variety of socio-historical and cultural practices, performing arts, festive customs and other cultural life systems and skills. Different from the tangible heritage which emphasizes the display and dissemination of materiality, intangible cultural heritage focuses on the presentation and communication of emotional and spiritual values. It is essential for researchers to understand that intangible cultural heritage integration with technology and media is only a way of presentation. Many intangible cultural heritage digital initiatives have become formal and superficial as a result of the drive for integration with new technologies and the overemphasis on this shiny technical veneer to the cost of their maintenance and sustainable development.

Taken together, recovering the substantial knowledge and intangible feelings of intangible cultural heritage in a meaningful digital communication environment is now a significant challenge for the sustainable development of digital intangible cultural heritage.

6 Measures to promote the sustainable development of intangible cultural heritage

The sustainable development of digital communication in the intangible cultural heritage should be centred on communicating cultural emotions supported by technology. The most crucial should be respected for the intellectual ownership of the heir community. The theoretical starting point for proposing this measure is that the person is the leading vehicle of inheritance, so reflecting on and acknowledging the fundamental role played by the person is key to grasping the specificity of intangible cultural heritage communication (Wulf, 2020)²⁰. By interacting with their surroundings, people build skills and knowledge for a variety of circumstances, whereas movements and gestures are common forms of communication for expressing and processing wisdom (Hou et al., 2022)⁴. It could be argued that the accurate contact of these relies on displaying static decorative patterns and unique craftsmanship, more significantly, on sensory experiences such as smell, hearing, touch and even temperature. Suppose these people-related emotional elements of intangible cultural heritage are preserved for the most part. In that case, the drawbacks of traditional digital design, which overemphasises technical expression, could be overcome, thus most possibly achieving an organic blend of rationality and emotion and effectively reducing the distance between products and people (Huang, 2020)⁵.

In line with this idea, many scholars are using motion capture (Mocap) technology to document the movements

and performances of performative cultures. Beyond the frame and inside the volume, mocap enables neutral and synchronous data collection (Delbridge, 2015)², thus making the human presence and the emotions expressed by the person more salient in a virtual digital environment, as confirmed by Chalmers et al. (2021)¹ in their study.

Another example is Stavrakis et al. (2012)¹⁵ conducted. They used mocap motion capture technology to record and archive high-quality movement data from Cypriot folk dances, creating a publicly accessible folk-dance archive. The implications of this research not only preserve this intangible cultural heritage through digital technology but also raise awareness of its dance heritage among local communities, teaching it to younger generations additionally. The project team has also developed a 3D video game as a novel means of teaching dance that anyone can use at home. The game uses 3D virtual reality technology to guide the user through the necessary body postures and movements, using pre-recorded templates of Cypriot folk-dance movements tied to the virtual character using motion capture technology. Users can select the dance they want to learn and perform along with the virtual teacher, while the user can also see visual feedback of their movements, which is done using Kinect real-time capture technology.

These studies have tried to consider the interactivity between people and objects in intangible cultural heritage culture, the powerful forces that emerge from human interaction, and the incorporation of environmental elements. Arguably, this allows the community of inheritors to express ideas and feelings effectively while simultaneously making the individuality and style of the intangible cultural heritage culture more distinct (Ziagkas et al., 2019)²⁵. The inheritors, as one of the core cultural elements of the intangible cultural heritage, would like to accept the logic of digital technology and move from the native cultural environment into the digital technological display space because they expect to enhance the cultural vitality in the outside socio-cultural area.

Therefore, it may be essential to clarify the subjectivity of the inheritors in the digital communication of intangible cultural heritage, use digital technology as a means, and insist on communicating cultural emotions as the core appeal.

7 Conclusion

In conclusion, this paper has considered technology's positive and negative roles in the digital transmission of intangible cultural heritage. It has also indicated that technological dominance is detrimental to the transmission of cultural emotions when technology is over-relied upon. The sustainable development of the digital communication of intangible cultural heritage may not favour this scenario. In response to the role of technology in digital communication, this paper has argued that it might be possible to facilitate the digital preservation and presentation of intangible cultural heritage. However, current technology's limitations have led to technology dominating intangible cultural heritage communication, divorcing culture from people and its

native environment. This slows emotion transmission and new cultural forms' healthy, timely growth.

This paper, therefore, attempts to suggest ways to squarely face the status of inheritors as "knowledge subjects" and to make the communication of human emotions the primary objective of digital technology. In this way, there is hope that the disadvantages of digital technology could be discarded while simultaneously affirming its value. Combining the two allows for a more robust and accurate expression of cultural emotions in digital communication, aiming to promote the sustainable development of intangible cultural heritage.

This paper is still at the stage of theoretical exploration and needs to explore in depth in a multi-disciplinary context. Further research should focus on the living essence of intangible cultural heritage, the interaction between people and the environment, and emotional factors of intangible cultural heritage. This would greatly help to examine the links between its sustainable development and technology more closely.

References

1. Chalmers, A. et al. (2021) "Realistic humans in virtual cultural heritage," *Emerging Technologies and the Digital Transformation of Museums and Heritage Sites*, pp. 156–165.
2. Delbridge, M., (2015). Motion capture in performance: an introduction. Springer.
3. Fanzhuo, D. et al. (2021) "Emotional drain in digital design for inheritance of Intangible Cultural Heritage," *E3S Web of Conferences*, 236, p. 05029.
4. Hou, Y. et al. (2022) "Digitizing intangible cultural heritage embodied: State of the art," *Journal on Computing and Cultural Heritage*, 15(3), pp. 1–20.
5. Huang Hui. (2020) "On the Design Programming Method of Interactive Products under Emotional Design [J]". *Popular Literature and Art*, (14): 106-107
6. Li, L., (2012) "Does intangible cultural heritage law resolve everything in China," *J. Int'l Com. L. & Tech.*, 7, p.355.
7. Liu Huaiyu. (2006). *The Mediocrity and Miracle of Modernity: A Textual Interpretation of Lefebvre's Critical Philosophy of Daily Life*. Central Compilation Press, Beijing.
8. Manovich, L., (2013). *Software takes command* (Vol. 5). A&C Black.
9. Meng Jun. (2012). "From techno-rational critique, technological supremacy to technological dominance - On the impact of technology on media power." *Contemporary Communication* (1), 3
10. Pérez-Seijo, S. and Vicente, P.N. (2022) "After the hype: How hi-tech is reshaping journalism," *Studies in Big Data*, pp. 41–52.
11. Postman, N. (2011). *Technopoly: The surrender of culture to technology*. Vintage.
12. Sang, X. et al. (2018) "Interactive floating full-parallax digital three-dimensional light-field display based on wavefront recomposing," *Optics Express*, 26(7), pp. 8883–8889.
13. Skublewska-Paszowska, M. et al. (2022) "3D technologies for intangible cultural heritage preservation—literature review for selected databases," *Heritage Science*, 10(1), p. 3.
14. Sorea, D. and Csesznek, C. (2020) "Intangible Cultural Heritage of the Făgăraș Land. Priority Dimensions," *Bulletin of the Transilvania University of Brașov. Series VII: Social Sciences • Law*, pp. 155–164.
15. Stavrakis, E. et al. (2012) "Digitization of Cypriot Folk Dances," *Progress in Cultural Heritage Preservation*, pp. 404–413.
16. Swensen, G. et al. (2013) "Capturing the intangible and tangible aspects of heritage: Personal versus official perspectives in Cultural Heritage Management," *Landscape Research*, 38(2), pp. 203–221.
17. Wang Ailing. (2009). "Media culture: The paradigm of mass culture dominated by 'technological rationality,'" *Journal of Culture* (2), 5.
18. Wang Weihua. (2011). "Digital and Physical Exhibition of Cultural Heritage in Museums," *Southeast Culture* (05), pp. 91-95.
19. *What is Intangible Cultural Heritage?* [online]. Available at: <https://intangible.culturalheritage.unesco.org/en/what-is-intangible-heritage-00003>. (Accessed 10 Sep 2022)
20. Wulf, C. (2020) "Performativity and dynamics of Intangible Cultural Heritage," *Ritual, Heritage and Identity*, pp. 76–94.
21. Xiao Bo, & Qian Shan. (2018). "Technology Cult and Cultural Dissonance in the Tourism Performing Arts Industry - The Case of Wuhan's Hanshow," *Journal of Tongji University: Social Science Edition*, 29(1), 10.
22. Xie, R. (2021) "Intangible Cultural Heritage High-Definition Digital Mobile Display Technology Based on VR Virtual Visualization," *Mobile Information Systems*, p. e4034729.
23. Yang Gao, Peng Chen. (2020) "Technology Dominance and Emotional Zero: Reflections on the Digital Technology Ethics of 'intangible cultural Heritage,'" [J]. *Guangxi Social Science*, No.301 07 p,140-145.
24. Zhang Li, Zhu Rong, Niu Chao and Shao Siyu, (2016) "Research on the Protection and Communication of Intangible Cultural Heritage in 3D Digitalization: A Case Study of Huishan Clay Figurines[J]," *Decoration*, no.280, pp.126-127.
25. Ziagkas, E. et al. (2019) "Greek Traditional Dances Capturing and a Kinematic Analysis Approach of the Greek Traditional Dance "Syrtos" (Terpsichore Project)," *In Interactive Mobile Communication, Technologies and Learning*, pp. 514–523.