Information Technologies and Cultural Tourism—The Case of the Virtual Museums

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Abstract The introduction of strategies that include information technology in the development of public cultural policies may potentiate the cultural democratization processes and boost tourism. The use and impact of information technology while facilitating cultural production and as an enabler instrument broadening of cultural public is a key piece in the way of the amplification of cultural tourism. In this article, it is argued that the introduction of strategies that include information technologies in the development of public cultural policies enhances the cultural tourism. Specifically, this article seeks to demonstrate the use and impact of information technologies while promoting cultural production and as a facilitator process of increasing cultural audiences, as well as being a key player in the way of cultural democratization and contribute to a more sustainable tourism.

Keywords Culture · Tourism · Democracy · Technology

1 Introduction

Culture should be a vehicle and an end of developmental processes of society, as it promotes the quality of life and well-being of its citizens, maintains the collective memory, and embodies the creative expression of the actors and social groups [1]. It is therefore important to promote global and local policies that, firstly, encourage creativity and cultural production and, secondly, enable the extension of audiences facilitating the access to cultural resources and boosting the tourism.

The World Tourism Organization (UNWTO) defines Cultural tourism as a type of tourism activity in which the visitor's essential motivation is to learn, discover, experience and consume the tangible and intangible cultural attractions/products in a tourism destination [2].

Maria de Lourdes Santos defends the development of a Sociology of Culture which aims to identify a number of issues concerning the characterization of culture,

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its transformations and the place it occupies in contemporary societies, in order to avoid a vision of culture as an isolated reality only within the reach of the elites [3]. In pursuing this goal, she argues that the main focus of approach of cultural policies should be the qualification of the offer, the promotion of artistic creation, the funding and regulation of the market and widening the participation in cultural life. Augusto Santos Silva maintains that speaking of public cultural policies means speaking of conditions of freedom and citizenship in democratic societies [4]. José Madureira Pinto also points out that government intervention and regulation are irreplaceable and must provide mechanisms for "vigilance", based on institutional and organizational formulas to value the autonomy of the creators and, at the same time, able to counteract any tendencies towards centralization and self-consecration that are likely to inhibit an effective participation in cultural processes of democratization [5].

According to these authors, it is for the Governments to accomplish the mission of fostering the democratization of culture, by promoting better access to cultural resources, respecting the plurality of cultures and fulfilling its role of active guardian of participatory democracy.

However, although we can witness, from the end of the Second World War, a cultural democratization movement, the form and the importance that has been given by the various governments to political and cultural investments is quite diverse. As Augusto Santos Silva points out, there appears to be an ideological confrontation between the "traditionalist right wing" and "modern left wing" that determines the formation and implementation of cultural policies [6].

In terms of the development of global policies, as it has often happened throughout history, what may appear to be unanimous, it is not. For example, the United Nations (UN) did not include any purpose/objective directly related to the development and democratization of culture when the "The objectives of the Millennium" were established [7] and, today, it still does not include any explicit objective for culture in the set of 17 objectives of sustainable development of mankind for the next 30 years, "The Road to Dignity by 2030" [8].

But the prospect of the European Union is different as it recognizes the need to induce in its member states an increased emphasis on public policies for culture, considering a better progressive integration of Europe. Programmes such as "Creative Europe" are an excellent example of this vision [9].

In this article, it is argued that the introduction of strategies that include information technologies in the development of public cultural policies enhances the cultural democratization processes and boosts tourism. Specifically, this article seeks to demonstrate the use and impact of information technologies while promoting cultural production and as a facilitator process of increasing cultural audiences, as well as being a key player in the way of cultural democratization and contribute to a more sustainable tourism.

2 Technology at the Service of Cultural Production

From the beginning, technology is established as a determining factor and responsible for the creative production and the way we look at art and culture. As Helena Barbas states, the model of the artist-engineer embodied by Leonardo da Vinci has never been confined to Renaissance. Artists have always used their skills as engineers taking advantage of the various developments of contemporary Sciences, in order to implement the latest scientific findings in their artistic production [10].

In the curriculum of Art history, both the content and the methodology reflect the innovations in technology. For instance, the invention of oil paint led to the change of fresco painting to oil painting and the production of paint tubes has accounted for innovating impressionist techniques which allowed artists to venture out of the studio and paint outdoors [11].

As it happens in nature, where according to evolutionary theories, living beings adapt themselves throughout centuries in order to survive, so happens with the phenomenon of artistic creation in which the incorporation of technology is part of this "evolutionary" process. Morriss Kay claims that creating visual art is one of the defining characteristics of the human species, but the paucity of archaeological evidence means that we have limited information about the origin and evolution of this aspect of human culture [12].

Information technologies can be defined as the use of computers to create, process, store, retrieve and exchange all kinds of electronic data and information [13]. For Barbas [10], computers, software and the internet are just an extra tool that artists can use in their practices in a new age of interdisciplinary approaches. But what Barbas calls "just an extra tool" is actually something transcendent because in this new world, Web 2.0, anyone can easily produce and consume content without specific training. As this is, in itself, an unusual fact in the history of modern times, it shall be accompanied by another component: the coexistence of the roles of producer and consumer. For the first time in human history, each of us can simultaneously be producer and consumer of the same resource: the Knowledge. We should therefore be concerned about how connective technology has already changed the way we learn, ever since the Internet and its informational and relational smartphone applications through became virtually ubiquitous [14]. This characteristic induces the constant discussion of the contents, allowing, on one hand, individual reflection and on the other hand, a combined reflection within the community.

The discussion on the introduction of new information technologies (IT) in the cultural production is not new. As a matter of fact, in 1968, Pontus Hultén organized a futuristic exhibition on art and mechanical technology at the Modern Art Museum in New York—MOMA. Following this direction, in 1968, the Institute of Contemporary Arts in London, has also organized the conference "Cybernetic Serendipity" focused on the relationship between computers and creativity [15]. In 1970, the organization Experiments in Art and Technology, Inc. (E.A.T.), which is dedicated to search for ways of collaboration between artists and engineers has organized a multimedia demonstration at the Osaka world Expo in the Pavilion of Pepsi. Some of the most

famous artist-engineer collaborations in this exhibition were focused on the artistic use of information technologies such as computers and telecommunications [16]. In 1970, the art critic Jack Burnham has also organized the exhibition "Software, Information Technology: a new meaning for art", at the Jewish Museum, New York, focused on software application as a means of interaction with the audience [17, 18]. After these pioneer events, the discussion has endured, and it has been the subject matter of many debates, studies, events and even academic dissertations.

At present, information technologies prevail. For example, writers use computers and word processors, painters make use of software for simulation and previsualization of his paintings, musicians use automatic melodic synthesizers and generators and sculpture applies CAD/CAM systems and 3D printers for prototyping. As a result of the advances in the computer market, access to this software is very economic, if not free, and its use almost always trivial. Such availability makes it possible for all people to be potential cultural producers and makes us think of a new idea of popular culture, much more dangerous than the one that is referred to in the text of 1944 by Adorno and Horkheimer [19]. Mass production of cultural goods, which was encouraged and made available by the mass media in order to "manipulate" the population is, this time, generated by society itself in an autophagic process. A good example are those home videos—despite being—mostly trifling and futile, they are seen and commented enthusiastically by millions around the planet. Fisher maintained that the distinction between art and non-art suggests the existence of a hierarchy of forms of expression, with the highest forms of art, therefore better ones, while the lower forms are not art and so are, at best, a distraction, or a pernicious tool, at worst [20]. The proliferation of these "distractions" and "pernicious tools" is perhaps the price to pay for the propagation of the access to the tools and creative production techniques.

3 Technology at the Service of the Cultural Tourism

Art makes use of technology mainly because it provides new tools, and forms of support and representation. But, on the other hand, art and culture can also work with technology as that allows the extension of the audience. Such an extension is possible by using single or combined multiple technologies and their application in different promotion strategies as well as the availability of the tourist cultural offer.

A good example is the use of the internet and virtualization technologies to allow visualization, contact and even remote interaction with cultural goods.

An advanced form of interaction, with increasing frequency, can be obtained by the use of so-called virtual reality technologies. In particular, fully immersive technologies, just with virtual objects, allow the spectator to have ("feel") contact with remote cultural goods and with the other spectators as if physically present. As shown by Parker, art, its contexts and display arrangements can be electronically transported out of exhibition spaces and be examined by individuals who may have never even entered a museum [21]. Such technology configures itself as an important

part in promoting the democratization of culture by stimulating an increased access to cultural goods. For example, by allowing an Indian spectator, with limited financial resources, to make a "visit" to the Metropolitan Museum of Art without leaving home in the antipodes of America. The augmented reality technology (Augmented Reality) in which there is immersion in the real world with the addition of virtual elements also allow spectators to get almost instantaneous information on cultural goods without having to recur to the acquisition of additional explanatory material or hire specialist services.

In addition to the remote access to cultural goods, one important expression of the impact of information technologies in the public is that we can be observe in the so-called Interactive Art—art form involving, in some way, the participation of the spectator [22]. Although this interaction can also be achieved without recourse to information technology, for example, the physical interaction of the viewer with works of large dimensions, such as large sculptures or artistic installations, more sophisticated interactions rely on sophisticated computation and electronic technologies. It is commonplace to use computers and sensors to respond to motion, sounds, heat or other sorts of stimulation. Apart from the works of art on the Internet and electronic art being susceptible of a high degree of interactivity, allowing the viewer to navigate the "work", in some cases, this local or remote participation induces dynamic changes of the work both in behaviour and form. An interesting example of this type of interactive art is the 12 m high D. Tower sculpture made by Lars Spuybroek and Q. S. Serafijn, exposed in Doetinchem in the Netherlands, which changes colour as a result of the interaction of cybernauts [23]. An application of interest of virtual reality in physical installations is the computer-generated interactive experience made available to visitors of museums allowing them to travel in space and historical time without having to leave the museum premises [24].

The available online books, music, films, reproductions of works of art, specialized periodicals and scientific and literary texts, despite the copyright-related controversy and intellectual property and the consequent impact and challenge to the sustainability of cultural goods, have also decisively contributed to broaden the cultural public. In addition to the existence of virtual libraries, virtual museums, numerous sites sharing music, videos, movies or serials, there are multiple thematic sites and ad hoc offers focused on authors, geographies and even in many academic works.

Information technology, particularly the automatic translation systems are already fundamental to break down linguistic barriers between cultural producers and consumers. It is expected that in less than two years, Microsoft will come out with the "universal translator" via Skype [25]. Such a system will allow instantaneous automatic voice translation in any existing language on the planet allowing two people to communicate normally using their native languages. This will have a positive impact on the extension of cultural theatre audience, opera or other spoken performances, to the extent that, regardless the language used in the performance, anyone will have an immediate understanding of what is said by listening to their own language. In addition, the automatic translation technologies from sign language into spoken language and from spoken language into sign language will remove traditional accessibility

barriers to dumb and/or deaf people [26]. Other examples of how accessibility technologies can remove barriers for these handicapped audiences are such systems that convert music and sounds into vibrations capable of being perceived by deaf people [27] or systems for partially sighted people which enable visual experiences that were previously forbidden to them.

4 The Case of the Virtual Museums

At present, museums are facing the challenge of better communicate and attract their public who, as a result of the evolution of society, have increasingly less available time to dedicate to culture and are, on the other hand, challenged with a greater number of competing offers. Most museums are confined spaces, created with the main objective of preserving and safeguarding our heritage [28]. This reality tends to change, insofar as the different actors will gradually become aware of the need to make use of new technologies to better communicate and facilitate new experiences to diverse audiences.

Currently most physical museums already have a web presence. However, this presence converts into varying degrees of available online information. Although there are museums that provide internet simple contact and offer basic information leaflet type, for example general information and a list of their exhibitions, there are totally virtual museums, only online, for example the International Museum of Women [29]. Amidst are those with physical facilities but also offer, at varying degrees of virtualization, exhibitions, interactive features, multimedia and searchable or browsable online collections. Such a diversity of positioning towards virtualization can be partially explained, according to Cunliffe, because museum professionals have only very recently become aware of the need to analyse the usability of virtual museums and have recognized the need to create their own guidelines for Internet [30].

There are nowadays several museums that can be visited "without leaving home". A good example, among many, is the NMNH (National Museum of Natural History) located in Washington, D.C., in the United States, dedicated to inspiring curiosity, discovery and knowledge about the natural world through the exposition of collections, exhibitions and educational extension programmes. Opened in 1910, the main building on the National Mall has an overall area of 140,000 m^2 and about 30,000 m^2 of exhibition and public area (equivalent to the size of 18 football fields). With an increasing focus on virtualization and interactivity, the museum is nowadays an excellent example of education and international cultural sharing, making accessible all its immense physical area to anyone with Internet access [31]. Figure 1 presents a virtual interface screen of this museum.

The software allows visitors to make a virtual tour using a computer (Windows, Mac, Linux) or mobile device (iPhone, iPad, Android). The tour is a self-guided virtual tour, room to room, or a virtual selection of areas and visit exhibitions within

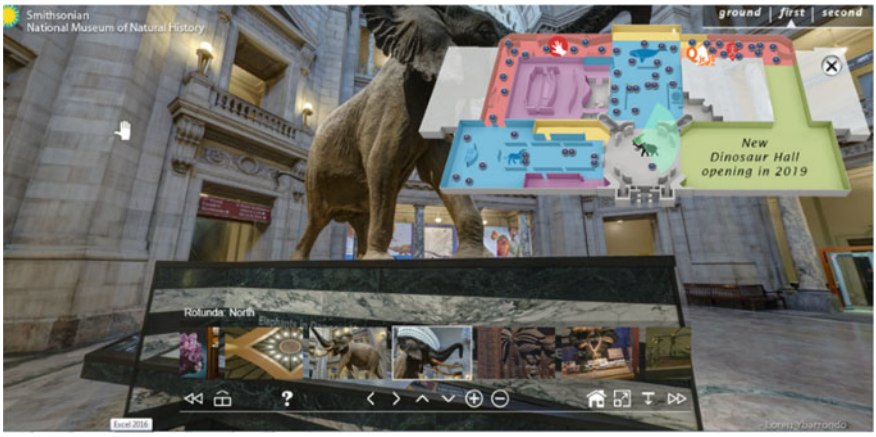

Fig. 1 Virtual interface of the National Museum of Natural History

the natural history museum building, as well the research of collections that are being exposed at the time or even exposed in the past.

In most virtual tours, visitors can navigate between the adjacent rooms by clicking on the links represented by blue arrows on the floor or, alternatively, use the navigation map in the upper right corner of the screens.

A visit to this museum in https://naturalhistory.si.edu/visit/virtual-tour is essential.

5 Conclusions

Emilio Vilar underlines that in the last years, we have witnessed the democratization and industrialization of culture; he wonders, however, if this will mean in fact an improved quality of life or, on the contrary, a decreasing in the quality level of cultural manifestations [32]. The discussion of the role of information technologies in the cultural tourism and in the democratization of the access to the production and consumption of cultural goods raises, as we have seen, a wide range of issues ranging from the quality of cultural production to the sustainability of cultural goods markets.

Having no intention to give a final response to any of these questions, in this text, in view of the above, the idea emerges that regardless the advantages or disadvantages brought about by technology, history will certainly recognize computer science, information theory and systems theory as fundamental intellectual models which, in combination with the advent of digital computing and telecommunications, have played a unique and significant role in the cultural tourism and "democratization" of culture.

References

1. Costa, P. (2007). *A Cultura em Lisboa. Competitividade e desenvolvimento territorial*. ICS.
2. World Tourism Organization. (2019). *UNWTO tourism definitions*. UNWTO. http://doi.org/10.18111/9789284420858
3. Santos, M. L. L. (2005). Políticas Culturais e suas incidências. *OBS* (14), 3–10.
4. Silva, A. S., Santos, A., Babo, E. P., Guerra, P. (2013). Cultural policies and local development: The Portuguese case. *Portuguese Journal of Social Science, 12*(2), 113–131.
5. Pinto, J. M. (1997). Democratização e desenvolvimento cultural sustentado: o papel do Estado. *OBS* (1), 4–7.
6. Siva, A. S. (2003). Como classificar as políticas culturais? Uma nota de pesquisa. *OBS* (12).
7. *UN the millennium development goals report 2014*. UN.
8. UN. (2019). *The sustainable development goals report 2019*. United Nations.
9. Creative Europe. (2022). *On governance and management of artistic creativity in Europe* (European Research Institute for Comparative Cultural Policy and the Arts—ERI Carts). Retrieved April 14, 2022 from http://www.creativeurope.info/
10. Barbas, H. (2011). Neo-Modernismos: o artista-engenheiro no século xxi. In *Modernista – Instituto de Estudos sobre o Modernismo* (p. 12), Lisboa, Portugal. ISSN-2182-1488.
11. Janson, H. W., Davies, P. J. E., & Janson, H. W. (2011). *Janson's history of art: The western tradition*. Prentice Hall.
12. Morriss-Kay, G. M. (2010). The evolution of human artistic creativity. *Journal of Anatomy, 216*(2), 158–176. http://doi.org/10.1111/j.1469-7580.2009.01160.x
13. Cameron, B. H., & Knight, S. (2010). Enterprise alignment and the challenge for organization development. In K. St. Amant (Ed.), *IT outsourcing: Concepts, methodologies, tools, and applications* (pp. 1419–1427). IGI Global. http://doi.org/10.4018/978-1-60566-770-6.ch089
14. Wiziack, J., & Santos, V. (2021). Evaluating an integrated cognitive competencies model to enhance teachers' application of technology in large-scale educational contexts. *Heliyon*. http://doi.org/10.1016/j.heliyon.2021.e05928
15. Santos, V. (2016). Art and culture in smart cities. In 4th Annual Meeting of the International Association for the Study of the Culture of Cities (IASCC), *Heritage in Transition: Scenes of Urban Innovation Conference in Ermoupolis*, Greece on July 27th–29th.
16. Shanken, E. A. (2002). Art in the information age: Technology and conceptual art. *Leonardo, 35*, 433–438.
17. Burnham, J. (1970). The aesthetics of intelligent systems. In *On the future of art* (p. 119). Viking.
18. Burnham, J. B. (1971). *Software, information technology: Its new meaning for art*. The Jewish Museum.
19. Adorno, T., & Horkheimer, M. (2002). The culture industry as deception. In T. Adorno & M. Horkheimer (Eds.), *Dialectic of enlightenment*. Stanford University Press.
20. Fisher, J. A. (2006). High art versus low art. In B. Gaut & D. M. Lopes (Eds.), *Aesthetics* (2nd ed.). Routledge.
21. Parker, E., & Saker, M. (2020). Art museums and the incorporation of virtual reality: Examining the impact of VR on spatial and social norms. *Convergence, 26*(5–6), 1159–1173. http://doi.org/10.1177/1354856519897251
22. Plaza, J. (1990). *Arte e Interatividade: autor-obra-recepção* (Vol. 1, No. 2). ARS. Retrieved April 14, 2022 from http://www.revistas.usp.br/ars/article/view/2909/3599
23. V2_, Institute for the Unstable Media. Retrieved April 14, 2022 from https://v2.nl/archive/works/d-tower
24. Roussou, M. (1999). Incorporating immersive projection-based virtual reality in public spaces. In *Proceedings of 3rd International Immerse Projection Technology Workshop* (pp. 33–39), Stuttgart, Germany, May.
25. Microsoft. (2022). Microsoft translator. Retrieved April 14, 2022 from https://translator.microsoft.com/

26. SLAIT. (2021). *Real-time sign language translator with AI*. Retrieved April 15, 2022 from https://slait.ai/
27. Torres, J. (2019). *Perception of music in the deaf and hard of hearing*. Capstone projects and Master's theses, 681. https://digitalcommons.csumb.edu/caps_thes_all/681
28. Muchacho, R. (2005). Museus virtuais: A importância da usabilidade na mediação entre o público e o objeto museológico. In *SOPCOM 2005: 4º Congresso da Associação Portuguesa de Ciências da Comunicação.*
29. Global Fund for Women, International Museum of Women. (2022). Retrieved April 14, 2022 from http://www.imow.org/
30. Cunliffe, D., Kritou, E., & Tudhope, D. (2001). Usability evaluation for museum websites. *Museum Management and Curatorship, 19*(3), 229–252.
31. National Museum of Natural History. (2022). Retrieved April 10, 2022 from http://naturalhistory.si.edu/
32. Vilar, E. R. (2007). Sobre a economia da cultura. *Comunicação & Cultura, 3*, 131–144. ISSN 1646-4877