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MUSEUS NUNCA FORAM (TÃO) DIGITAIS
MUSEUMS HAVE NEVER BEEN (SO) DIGITAL

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Resumo

The social distancing required by the coronavirus pandemic has increased the interest in remote activities, and the digital experiences provided by museums and other cultural institutions to promote their historical and cultural heritage have been put to the test. In a sudden change, digital experiences have become the main alternative for these institutions to perform this task. Digital catalogs, 360º videos, virtual tours, video and image collections, among others, have become more popular than ever. However, the amount of artistic production in digital formats available at museums did not meet the demand of an essentially digital audience. The interest shown at the beginning of the pandemic was sustained for only two weeks and then fell back to pre-pandemic levels. Then present essay aims at identifying factors that may have contributed to the lack of interest in digital experiences available to visitors. Additionally, it establishes relationships between these and analogous practices used in the physical spaces of cultural institutions, and specific features of the digital space. With that, we seek to encourage reflections on these experiences and support their improvement in this new context.

Keywords: Museum, Exhibition, Executive design project, Digital, Internet

1 Introduction

Social distancing measures were hurriedly implemented worldwide to respond to the rapid expansion of COVID-19 in the first half of 2020. As a result, public spaces were emptied and homes became the centers of consumption and production. Many places where social and cultural activities are carried out were affected by this change — movie theaters, auditoriums, theaters, restaurants, shopping malls, museums, among others.

As a consequence, there was an increase in demand for remote activities. Streaming services boomed, as well as online shopping, video calls, and delivery services.

In the world of museums, the landscape was the same. Between March 15 and 28, 2020, the number of searches for the term online museums on the Google platform achieved ten times more hits than the average of the previous five years[1]. Other similar expressions, like online museum, virtual tour, virtual museum and museums online, followed a similar pattern. All of a sudden, the terms mentioned above became popular, and lists of museums that could be visited virtually started featuring on social media and messaging apps.

One of the most common experiences offered by museums was access to the digital catalogs of their collections. Even before the pandemic, catalogs of museums around the world were available for public viewing on their websites, although some had more features than others. In that sense, some collections stand out, like the Prado Museum[2], in Spain, the Art Institute of Chicago [3], in the USA, and the Rijksmuseum[4], in the Netherlands, among others. Another widespread experience was the virtual tour within the physical space of museums. Institutions like the Dalí Theater-Museum[5], in the USA, the Thyssen-Bornemisza National Museum[6], in Spain, and the Louvre[7], in France, are some of the institutions with these tours available on their websites. Several of these experiences were created in partnership with Google, through the Google Arts and Culture[8] project, which is a platform that hosts most of the virtual tours available, as well as other forms of digital exhibitions developed by Google's team. To a lesser extent, other experiences emerged, like the use of videos in the Picasso Museum[9], Spain, 360° applications in the Metropolitan[10], USA, and in Vatican Museums[11], Vatican, and 3D visualizations of artifacts, in the British Museum[12], England, among others.

In the context of a highly digitized pandemic, with a wide range of museum experiences available at home, one could expect a level of engagement equivalent to the interest shown globally by the searches for online museums. But unlike other services that were also in high demand, like streaming services, the enthusiasm with museums only lasted a few days. As shown in Figure 1, the interest in online museums and similar terms faded as quickly as it had increased. Although the data obtained from Google are superficial and show referenced results[13], they prompt us to rethink these forms of exhibition that gained momentum during the pandemic.

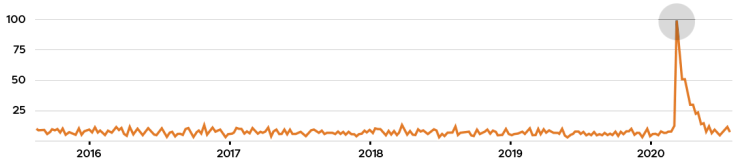

Fig. 1: Interest chart over the past five years for the term online museums, on the Google search platform. The highlighted peak represents the weeks from March 15 to 28. Source: Author, 2020.

This article intends to address some of the reasons that may have contributed to this sudden drop in interest through an exploratory analysis of these experiences. We believe that this analysis can inform the approaches museums are adopting to exhibit and promote their contents in an increasingly digital world. For this purpose, the analysis was divided into four main topics: 1) nature of the exhibition objects, which analyzes the content of the exhibitions, 2) narrative development and 3) flow in the exhibition space, both on how these contents are presented, and 4) relationship with the audience that accesses these exhibitions online, on the rapport and exchange that these museums establish with their visitors.

Two searches were done on the Google search platform for content published between March and April 2020 to simulate the searches done during the peak of popularity of online museums and similar terms. In the first search, the term online museums was searched worldwide. As shown in Table 1, the first 31 recommendations of art museums with online exhibitions were selected. They were cited in the first seven results[14]. In the second search, the term museu online was used, restricting the search to Brazil. Table 2 shows the first five new recommendations of Brazilian art museums with online exhibitions, cited in the three first results[15]. Since the only Brazilian museum that appeared on the international lists was the MASP — the São Paulo Museum of Art — our second search aimed at including other relevant Brazilian initiatives in the analysis. In total, the search retrieved 30 foreign and six Brazilian institutions from ten different recommendation lists.

	Museu	País	Catálogo digital	Passeio virtual		Apresentação digital	
				Outros	Google	Outros	Google
1	British Museum	Inglaterra	■		■		■
2	Rijksmuseum	Holanda	■		■		■
3	Getty Museum	EUA	■		■		■
4	Museu do Vaticano	Vaticano	■	■			
5	Metropolitan	EUA	■		■		■
6	Louvre	França	■	■			
7	Guggenheim	EUA	■		■		■
8	Museu Nacional Thyssen-Bornemisza	Espanha	■	■	■		■
9	Museu Van Gogh	Holanda	■		■		■
10	Instituto de Arte de Detroit	EUA	■				■
11	Museu Georgia O'Keeffe	EUA	■				
12	High Museum of Art	EUA	■				■
13	MoMA	EUA	■				■
14	Museum of Fine Arts of Boston	EUA	■				■
15	Museu d'Orsay	França	■		■		■
16	Guggenheim	Espanha	■		■		■
17	Museu de Arte de São Paulo	Brasil	■		■		■
18	Museu Nacional de Arte Moderna e Contemporânea	Coréia do Sul	■		■		■
19	National Gallery of London	Inglaterra	■	■	■		■
20	Galeria Uffizi	Itália	■		■	■	■
21	The Dali Theater-Museum	EUA	■	■		■	
22	Museu do Prado	Espanha	■				
23	Hermitage	Rússia	■	■	■		
24	Galeria Nacional de Arte de Washington	EUA	■				■
25	Instituto de Arte de Chicago	EUA	■		■	■	
26	Nacional Gallery of Victoria	Austrália	■	■			
27	Museu Picasso	Espanha	■				
28	Hong Kong Heritage Museum	Hong Kong	■		■		
29	The Broad	EUA	■				
30	Pergamon Museum	Alemanha	■	■	■		■
31	de Young Museum	EUA	■		■		■

Tabela 1: List of the 31 museums selected from the first seven results published between March and April 2020 on the Google search platform for the term online museums. The Table shows the digital exhibition solutions that each museum offers, identifying whether or not they used the Google Arts and Culture platform. Source: Author, 2020.

	Museu	País	Catálogo digital	Passeio virtual		Apresentação digital	
				Outros	Google	Outros	Google
1	Pinacoteca de São Paulo	Brasil	■	■	■		■
2	Museu Oscar Niemeyer	Brasil	■	■	■		■
3	Instituto Inhotim	Brasil			■		■
4	Museu Casa Guignard	Brasil		■			
5	Museu Casa Portinari	Brasil		■			

Tabela 2: List of the five Brazilian museums selected from the first seven results published between March and April 2020 on the Google search platform for the term museus online. The chart shows the digital exhibition solutions that each museum offered, identifying whether or not they used the Google Arts and Culture platform. Source: Author, 2020.

Three main types of exhibitions were identified and established the ground for this article: digital catalogs, virtual tours, and digital presentations[16]. Of the 36 selected museums, 33 display their collections in digital catalogs. The only three museums that do not feature that are the Instituto Inhotim, Museu Casa Guignard, and Museu Casa Portinari, all of which are located in Brazil. Of the selected museums, 27 offer virtual tours within their physical space — and 21 use the Google Arts and Culture platform. In 15 of them, this platform is the only alternative. Twenty-five of the selected museums display their content in digital presentations — and only three use their own tools for that, whereas the other 22 use the Google Arts and Culture platform.

2 Nature of the exhibition objects

> An exhibition without its minimum ration of reality is reduced irremediably to a book to be read standing up ... An exhibition is known to be poor when it is replaced ... without leaving the house, by a good book, a good video, a good recording or a good internet connection. A visitor certainly could go out and see an exhibition like this, but would prefer not to (Wagensberg, 2005, p. 314).

In none of the online exhibitions of the researched museums the works on display are essentially digital: they mostly refer to material cultural objects represented in the digital space. This characteristic determines the analysis that follows. The absence of materiality — of the works and of the museum halls themselves — is probably the main reason for the lack of interest in online exhibitions. One can fully understand that today a streaming service replaces the experience of going to the movies much better than a visit to an online museum does when compared to a visit in person. There is still no technology available to make the experience of enjoying a work of art in a virtual museum similar to the live experience. We must accept the fact that today the digital representation of a material cultural object does not replace the face-to-face experience. Therefore, a digital exhibition design project does not have to take on such a responsibility.

However, there are other ways to seek greater engagement with these experiences. This could be done by properly transposing certain consolidated attributes of a physical exhibition or by adopting new features created with this digitized context in mind. An online museum can be accessed from anywhere and visited by a great number of people from all around the world, and only five of the surveyed museums did not have their collections in English. Furthermore, some digital catalogs, like those of the Rijksmuseum, the Prado Museum,

the Getty Museum and the Washington National Art Gallery, have high resolution images that enable viewers to see details that would be invisible to the naked eye on the museum premises.

3 Narrative development

An important aspect that could lead to greater engagement between visitors and content is how the narrative of an exhibition is prepared. When studying museum language as a communication process, Mário Chagas (2011) says that the definition, conservation, and selection of cultural assets — i.e. a museum's collection — are similar to dictionaries. On the other hand, the combination, display, and organization of these assets — the exhibition design project — is analogous to syntactic structures. Neither dictionaries nor syntactic structures per se constitute a language, but they do so when combined. Therefore, museum language does not exist if it fails to include cultural assets combined with a set-up designed specifically for them. In other words, museum language depends both on the collection — the exhibited objects — and on a narrative, a story that will give meaning to the objects.

David Carrier (2006, p. 94) has a similar point of view. He states that "just as words form sentences whose sense and reference depend on their components, so too visual works of art set together have meaning that they do not possess in isolation". He continues: "There is no doubt that the sequence of works of art, their distribution, their hanging or positioning, even their illumination and wall color ... are the essential preconditions to enable them to express something" (Beyer, 2002, p. 29, cited in Carrier, 2006, p. 103).

In most cases, a digital exhibition project will always consist of a database and an interface that presents content aesthetically. The database is what Chagas associates with dictionaries, the collection itself. It is where the cataloged information of these contents is stored. The interface, on the other hand, materializes the syntactic structure, the narrative. As Lev Manovich says in his book *The language of the new media*:

> In general, creating a work in new media can be understood as the construction of an interface to a database. In the simplest case, the interface simply provides access to [information from this] database ... But the interface can also translate [this] database into a very different user experience (2001, p. 226).

The structure of the three types of online exhibitions found in the researched museums — digital catalogs, virtual tours, and digital presentations — are related to what Manovich explained and deal with different ways of creating a narrative. Most of their contents are displayed in two visual levels. The first level shows a more general view and a set of related works. The second, a more specific view, displays the work of art in isolation and its full or partial catalog record.

In their origin, digital catalogs were research tools. Their structure and interface have an archive-oriented logic that is typical of cataloging systems commonly operated by specialized teams. They are tools originally intended for educational purposes — targeted at researchers — but that also started to be used to share information with a non-specialized public. In these cases, the construction of the narrative is determined by the proactivity of visitors in their research. There is no longer a predetermined route established by an exhibition design project. The narrative is created as the public changes the tool's parameters and views new sets of works. However, this can be tricky, since some visitors prefer to be guided by a curatorial narrative than to do their own research[17].

Catalogs basically consist of lists, often in a grid format, and catalog records. The lists feature clippings of works selected by a visitor, and the records have detailed information about a single selected work. In these lists, the works appear in a standardized fashion, with little or no differentiation between them: the works are presented as a list that is not always based on their characteristics or similarities. The 33 catalogs we researched display their collections in a list or grid format.

The individual records of the works, on the other hand, have a greater variety of viewing modes and features across different museums. Although there are simpler interfaces, like those found in Brazilian museums, the Vatican Museum, and the Louvre, there are also more complex ones, like those of the Art Institute of Chicago, the Prado Museum, the MET, the British Museum, and the Rijksmuseum. These complex interfaces have more and better organized information about the works and enable new routes and narratives for the visitors. However, even though there is variation from one museum to another, the solutions adopted are repeated homogeneously for the other works of that institution, creating the same visual pattern throughout the exhibition flow. The only exception is the catalog of the Van Gogh Museum, whose records present each work against a different-colored background.

Virtual tours, on the other hand, get inspiration from physical exhibitions to create online narratives. They simulate the museum premises, placing visitors in a 3D environment and allowing them to explore the halls as if they were in the actual venues of these institutions. Unlike in catalogs, the routes are predetermined in the exhibition design project, and the proactivity of the visitors is not as important. The works are displayed according to the specifications of the original project, transposing the narrative of the physical space to the virtual experience. This 3D environment plays the same role as that of the list in digital catalogs: showing a set of works under a common theme and narrative. Similarly to the lists, each work can be linked to its

catalog record. Of the 27 virtual tours featured in our research, the only institution that has catalog records for all displayed works is the National Gallery, in England. Other institutions, like the Thyssen-Bornemisza Museum, the Pinacoteca de São Paulo, and the Louvre, only show information about some selected works. Some institutions like the Vatican Museum and the Museu Casa de Portinari, on the other hand, do not display any information about their works.

The 3D environment enables visitors to understand the set-up and size of the rooms, as well as appreciate the architecture of the museum, with characteristics like its high ceiling, textures, and materials. Visitors can pay attention to the details of the exhibition design project, circulation routes, lighting, work display, and more. Some museums, like the National Gallery of Victoria, in Australia, the Thyssen-Bornemisza, in Spain, the Dali Theater-Museum, in the USA, and the Pinacoteca de São Paulo, in Brazil, offer an alternative experience with virtual reality, but visitors must have a specific device. Today, since visits take place on the screens of computers and other devices, creating a narrative for virtual tours can be challenging. Online experiences do not have the same impact as face-to-face experiences. Their narratives tend to be too long, as if created for physical visits that last longer, and this is incompatible with visits made through a computer or device.

Jay David Bolter and Richard Grusin (2000) reflect upon a possible remediation process, in which different media would interact to acquire new meanings and generate new visual typologies. Despite its intrinsically innovative nature, any new media will initially follow the patterns and uses of other cultural traditions to enable its inclusion in people's daily lives. Something based on what society is already familiar with would enable individuals to gradually understand new features and create new meanings. For example, early digital media interfaces make reference to written text. The first cultural object to be digitized was the text (Manovich, 2001, p. 74), and this affected the structure of the new emerging languages. The concept of page, an element of finite size that can be sequenced, as in a book, was also incorporated into the digital world. In the 1990s, in spite of the addition of other objects like images, videos, charts, drawings, and tables, the interfaces remained essentially traditional pages, similar to those found in any newspaper (Manovich, 2001, p. 74-75).

Some resources were gradually incorporated throughout this evolution process, creating more interactive and dynamic experiences — such as hyperlinks, the html format and languages like JavaScript. This was a fundamental process to enable new technologies to be used without traditional constraints. At the same time, it unleashed their unique potential, which could not be fully explored in traditional media. This evolution gained momentum at the beginning of the 21st century, with the appearance of blogs and social networks. The Internet became a social environment with a great degree of interactivity and greater capacity for collaboration in the production of content. In view of the emergence of new online services, the idea of a page lost strength. References to printed formats revealed limitations and started to be replaced by new interfaces.

Today's virtual tour experiences refer directly to this process. They are forced attempts to maintain cultural tradition in a context where it operates more as a restrainer than as an enhancer. It is understandable, since there is a lack of references that show these constraints. However, it is misplaced and fails to reproduce the sensations of a truly physical experience.

Similarly to virtual tours, digital presentations have a predetermined narrative. They are stories told through a set of texts, images, audios, and videos about museums, collections, themes, artists, and works. The narrative unfolds in a linear manner and requires simple actions from visitors, like clicking on arrows or scrolling up and down a page, and this can make visits monotonous. Throughout these stories, visitors can click on the works that are displayed and find more details about them, just like in digital catalogs and virtual tours. This is the format that makes the best use of digital features and the most different alternative from the traditional aesthetics used by museums. However, the dynamics of any exhibition in this format are very similar in all museums. The resources available are scarce and, therefore, these narratives eventually become rather similar.

4 Flow in the exhibition space

> Imagine art museums organized in … eccentric ways displaying paintings according to size, from smallest to largest; according to color, grouping Chinese, Indian, and Italian pictures with red together; or according to birthdate of the curator responsible for acquisition … Museum hangings based upon such classification are unlikely to be employed (Carrier, 2006, p. 93).

Overall, visitors can move about an exhibition in linear or non-linear manners. In linear flows, visitors follow a predetermined path. In non-linear flows, visitors have to decide what flow or path they will take. The Guggenheim Museum, in New York, is a clear example of linearity, with a circular flow enabled by Frank Lloyd Wright's project. Although each and every visitor may start on a random floor or walk toward opposite directions, the number of possible paths is limited and controlled. A typical example of a long-term exhibition can be found on the second floor of the Pinacoteca do Estado de São Paulo. Visitors have a similar experience because the rooms follow a numerical sequence from 1 to 11, promoting a circular route throughout the building. On the other hand, the permanent collection called Picture Gallery in Transformation at the MASP

follows a "multiple logic" visitor's route. Designed by the architect Lina Bo Bardi, the open floor plan and the way the paintings are displayed allow visitors to take non-linear routes, as illustrated in Figure 2[18].

Fig. 2: NMASP's exhibition design project creates a free flow which allows the public to choose from a wide range of paths. Source: Cleber Vallin, 2016. Available at: https://commons.wikimedia.org/wiki/File:Acervo_Exposi%C3%A7%C3%A3o_Recente-8.jpg. Accessed 20 August 2020.

> The easels are arranged in rows in the large gallery space, with no divisions, located on the second floor of the museum. Removing the artworks from the walls and displaying them on these easels allow a closer encounter between the public and the artworks. The visitor is invited to walk through the gallery in the midst of the artworks like a forest of pictures that seems to float in space. The open, fluid, and permeable gallery space offers multiple possibilities of access and readings of the works, eliminating predetermined hierarchies and scripts. (Picture gallery in transformation, 2018)

As mentioned above, when it comes to physical spaces, one will always be able to customize his/her narrative while visiting a museum, including: walking pace, points of interest, resting time, and reflection upon the art.

> Nothing prevents [a visitor] from walking directly to some favorite paintings, taking little note of the museum flow plan. Nor need you read the wall labels. And even when an exhibition is arranged chronologically, it is usually possible to walk to the end and then view the art in reverse chronological order (Carrier, 2006, p. 108).

However, the level of customization of a visit is limited by some fixed elements. It is impossible to rearrange the sequence of the works according to individual criteria, for example. A priori, there is only one possible arrangement of works in a physical exhibition. The works do not change positions and this rigidity determines the limits of any narrative. In a digital environment, these limitations do not exist. One of the attributes highlighted by Manovich (2001, p. 30-31) is modularity. It is the potential of each digital object to have a modular structure that is actually part of a larger structure, which is also modular. Each group element is totally independent; the combination of objects is not permanent, but circumstantial. The same object can be part of several combinations simultaneously. According to Carrier, art works can be displayed in eccentric ways to tell different curatorial, educational, and customized stories to specific target audiences, including more horizontal relationships with the exhibitions that enable visitors to create and tell their own stories.

This modularity is clear in digital catalogs due to the variety of search features they have. In the catalogs of the Art Institute of Chicago and of the Rijksmuseum, one can have access to art collections by using color as a search criterion. The Metropolitan Museum catalog allows visitors to search for works that portray birds, for example, and in the Guggenheim Bilbao visitors can choose to see the museum's latest acquisitions. Exhibition spaces can be reorganized at any given moment. During virtual tours, the experience is partially limited by the lack of modularity imposed by 3D environments. Although it is possible to move toward one direction and into different rooms, the format is not modular. A work of art will always be displayed next to the same works, in the same room, and on the same floor. On the other hand, digital presentations, as well as digital tours, have unique linear reading routes that are not modular.

If on the one hand, social distancing forced us to stay home and kept us from going to other physical spaces, on the other hand it made us look for further possibilities in spaces of information. There are interfaces like video calls, streaming of shows and movies, as well as search interfaces in virtual shops that are being exhaustively used. But some experiences, like those we addressed above, attracted greater interest for a short time and then lost popularity.

5 Relationship with the audience

The Internet is a very diverse and dynamic ecosystem where several corporations and institutions compete for attention and try to build a closer relationship with the users. To achieve that, companies must become familiar with different audiences and understand their preferences, so as to constantly adapt their relationship strategies and content.

Museums are known for having a long-lasting tradition of carrying out surveys to find out their visitors' profiles and preferences. In addition to that, surveys enable the museums to measure the success of their programs and exhibitions (Schmilchuk, 2012, p. 23, our translation). The first records of museum surveys date back to the beginning of the 20th century (Koptcke, 2005, p. 188, our translation).

> The concept of museum is in constant evolution, driven forward by a combination of curatorial vision, artistic innovation, and the demands of audiences. The first challenge for museums of the 21st century is to … design programs that can meet the audience's demand for active engagement with art. The digital age forces us to respond to the needs and expectations of our audiences in new ways (Serota, 2016, para. 4).

Analyzing and understanding visitors' behaviors during art exhibitions help improve their experience and fulfill their needs and expectations. One of the most traditional and efficient techniques to understand people's engagement during visits to museums is called Timing and Tracking. According to Yalowitz and Bronnenkant (2009, p. 49-50), the Time and Tracking technique collects data that shows the visitors' routes, how much time they spent in each room, and how many stops they made inside the museum. These data describe the visitors' trajectories in the halls, their interaction with other groups, teachers, and volunteers, as well as their use of interactive objectives or videos. Furthermore, it is possible to collect demographic information like age range, number of adults and children in a given group, gender, among others.

In a digital environment, the space and the cultural objects within it are made of codes. All of them, be it an image, sound or video, stem from a code that describes and represents them. The same happens with all the activities that can take place in these spaces: any interaction with the environment or objects also has codes to describe it. An important aspect worth highlighting is that everything that takes place in these spaces is recorded and these records can be stored and analyzed. Websites and other online applications usually have tools that record the flow of visits and accesses, organizing the information in databases. These data are often used to suggest contents that may appeal to the public based on surveys and previously accessed data. Of the 33 catalogs we analyzed, 26 have codes that enable this recording. However, in none of them the information returns to visitors in the form of customized recommendations.

Other ways of attracting different audiences to museum spaces and contents include establishing personal connections, offering access to topics of their interest, enabling them to contribute to content production, and, ultimately, making them feel as if they belong there. In the Rijksmuseum, visitors have access to tools that are connected with its digital catalog and allow them to create their own narratives, grouping works of art according to criteria they establish[19], subverting the predetermined systems developed by the institution. The narratives created by visitors and those created by the museum itself are available to everyone. Any visitor can access them on the museum's website or app from home or in person, inside the museum. It is the only online museum in which visitors can play the role of co-curators of the collection. The Pergamonmuseum museum, in Germany, and the Prado, in Spain, allow visitors to create a personal selection of works of art, but that cannot be shared with other visitors.

6 Final remarks: looking into the future

Overall, no industry was prepared to deal with the consequences of social distancing. Museums were not expecting all this publicity and interest in their digital branches — let alone that the digital world would take the place of their facilities. As a result of society's exponential digitization, this phenomenon, which could have taken a few more years to be completed, suddenly came about when public spaces became empty. However, it became clear that even though visitors were already familiar with digital contexts, online museums failed to meet their needs of quality cultural content online. Nevertheless, the remote experiences that have been promoted by institutions to ensure they remained connected with their audiences will most certainly result in changes that will not disappear when face-to-face interactions are resumed. They will be incorporated, re-signified, and become part of a new reality. Much has already been done to this end, and new reflections and perspectives will arise from this process. The evolution of online activities will continue in an upward trend.

On the one hand, this development should not be understood as a way of replacing live experiences. We must think about how digital strategies can complement the experience of art galleries, whether remotely or within exhibition spaces, and how the relationship between museums and their audiences can be improved, considering customization of the narrative, contact points, the best way to present information, among many other variables.

On the other hand, improving and developing a digital environment should not be perceived as an extraordinary effort, but rather as an additional tool — a necessary one — in the democratization of the access to cultural heritage. Content meant for remote access is not supposed to compete with physical spaces for the

interest of potential visitors, but it can enable communication with countless people who would not visit the museum otherwise, for whatever reason. Therefore, thinking about how museums can speak to these audiences, as well as how they will benefit from the features of the digital universe, is key to achieving this goal.

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2 Link to the work The Birth of Saint John the Baptist, de Artemisa Gentileschi. Available at: https://www.museodelprado.es/en/the-collection/art-work/the-birth-of-saint-john-the-baptist/65572d18-d9a1-42b8-bddd-f931c4b88da6. Accessed 20 August 2020.

3 Link to the work Green Mountains, Canada, de Georgia O'Keeffe. Available at: https://www.artic.edu/artworks/2895/green-mountains-canada. Accessed 20 August 2020.

4 Link to the work The Serenade, de Judith Leyster. Available at: https://www.rijksmuseum.nl/en/collection/SK-A-2326. Accessed 20 August 2020.

5 Available at: https://www.salvador-dali.org/en/museums/dali-theatre-museum-in-figueres/visita-virtual/. Accessed 20 August 2020.

6 Link to the exhibition Rembrandt and Amsterdam portraiture, 1590-1670. Available at: https://www.museothyssen.org/en/thyssenmultimedia/virtual-tours/immersive/rembrandt-and-amsterdam-portraiture-1590-1670. Accessed 20 August 2020.

7 Link to the exhibition The Body in Movement. Available at: https://petitegalerie.louvre.fr/visite-virtuelle/saison2/. Accessed 20 August 2020.

8 Available at: https://artsandculture.google.com/. Accessed 20 August 2020.

9 Link to list of rooms made available ON video. Available at : http://www.museupicasso.bcn.cat/ca/colleccio/sales-de-la-colleccio / index_en.html. Accessed 20 August 2020.

10 Link to The Met 360 ° Project. Available at: https://www.metmuseum.org/art/online-features/met-360-project. Accessed 20 August 2020.

11 List of 360 ° applications. Available at: http://www.museivaticani.va/content/museivaticani/en/ collezioni / musei / tour-virtuali-cast.html. Accessed 20 August 2020.

12 Three-dimensional views of objects displayed in the British Museum on the Sketchfab website. Available at: https://sketchfab.com/britishmuseum. Accessed 20 August 2020.

13 A value of 100 represents the most commonly searched query, the peak of popularity of a term. A value of 50 means that the term was half as popular. A score of 0 means that there were not enough data about the term.

14 All search results on the Google platform featured museum recommendation lists. The lists presented are:

1) Good House Keeping. Available at: https://www.goodhousekeeping.com/life/travel/a31784720/best-virtual-tours/. Accessed 20 August 2020.

2) The Guardian. Available at: https://www.theguardian.com/travel/2020/mar/23/10-of-the-worlds-best-virtual-museum-and-art-gallery-tours. Accessed 20 August 2020.

3) Ecobnb. Available at: https://ecobnb.com/blog/2020/03/online-museums-free/. Accessed 20 August 2020.

4) Timeout. Available at: https://www.timeout.com/travel/virtual-museum-tours. Accessed 20 August 2020.

5) Travel + Leisure. Available at: https://www.travelandleisure.com/attractions/museums-galleries/museums-with-virtual-tours. Accessed 20 August 2020.

6) MentalFloss. Available at: https://www.mentalfloss.com/article/75809/12-world-class-museums-you-can-visit-online. Accessed 20 August 2020.

7) World of Wanderlust. Available at: https://worldofwanderlust.com/virtual-museums-10-museums-you-can-visit-online/. Accessed 20 August 2020.

15 All search results on the Google platform featured museum recommendation lists. The lists presented are:

1) Best destination. Available at: https://www.melhoresdestinos.com.br/museus-virtuais.html. Accessed 20 August 2020.

2) Tecnoblog. Available at: https://tecnoblog.net/331627/10-museus-online-para-visitar-durante-a-quarentena-do-covid-19/. Accessed 20 August 2020.

3) Archdaily. Available at: https://www.archdaily.com.br/br/936525/6-museus-brasileiros-com-visitas-online-para-conhecer-sem-sair-de-casa. Accessed 20 August 2020.

16 These digital presentations are based on editorial language with text, images, videos, and audio files, sometimes in slideshow mode.

17 Some museums receive visitors in their storage rooms, however, their main initiative is to present sets of works with a common theme determined by curators.

18 Licensed by: CC BY-SA 4.0. Available at: https://creativecommons.org/licenses/by-sa/4.0/deed.pt_BR. Accessed 20 August 2020.

19 Available at: https://www.rijksmuseum.nl/en/create-your-own-route. Accessed 20 August 2020.