

# Technological Reshaping of Traditional Museum Roles: Digitization and the Emergence of Virtual Museums in the Age of COVID-19

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## Abstract

Museums constantly conduct research to learn how they can become more efficient educators and increase engagement with their visitors. These institutions have adapted and many have created ways in which visitors can use technology to make their experience more interactive. Over the past few decades, museum professionals have been digitizing their collections and a roaring debate over the creation of digital museums has ensued. Completely digital museums have very recently emerged, completely changing the way the public interacts with these institutions. This paper will explore how the COVID-19 pandemic has affected museums, the creation of completely digital museums and the debates concerning the role of technology in these institutions and the increased role of technology within them.

## Technological Reshaping of Traditional Museum Roles: Digitization and the Emergence of Virtual Museums in the Age of COVID-19

In the twenty-first century, many professions have adapted to new advances in technology. Especially in education, teachers and students now have access to newly created online databases which make international research more accessible. Technology has undoubtedly made our lives easier, however in some industries technology is making various professions obsolete: including museum professionals. In the field of museum studies, museum professionals are tasked with balancing visitor's engagement, enjoyment and achieving their set education goals when they design exhibits. While a curator may be enthusiastic about a particular exhibit, the public may not even notice its installation if it fails to grab their attention. With the unprecedented COVID-19 pandemic, museums have had to adapt fast to create virtual museums and this drastic change will impact how museums will be created and curated moving forward, post-pandemic.

This research project will explore the ways museums have learned to adapt to the increasing use of technology. Museums are not able to maintain interest of the public without adopting trends. These trends vary but those related to culture and technology shape exhibits and how museums have to cater to the visitor's experience. Additionally, this paper will examine how much technology museums have begun to integrate into their exhibits and explore debates on the inclusion of technology. How museums have adapted to technological advances has pushed the digitization process which some museum goers and museum professionals predict will change the industry for the worse. With technology constantly updating, museums are faced with the challenge of keeping up-to-date while combating the potential of being completely digitized, thus erasing the need for the storage and display for historic artifacts. This paper will show that technology is not a new phenomenon in the museum industry, however the unprecedented COVID-19 pandemic has accelerated digitization and initiated the creation of completely digital museums.

While technology appears in every aspect of life in the twenty-first century, earlier generations had limited access to top of the line technology. However, museums made an effort to integrate much of this technology into their visitor's experience. Throughout the 1970s and 1980s, debate about the use of technology in museums erupted as science museums were becoming more popular in the United States. While science and technology museums grew in popularity, many critics felt that they could not be classified as museums at all because of their non-traditional subject focus. In hindsight, these early science and technology museums pioneered the use of technologically involved exhibits. In the 1970s, the Museum of Science and Industry in Chicago opened a new exhibit displaying the nutritional and caloric values of food in a top-of-the-line computerized exhibit, as seen below in Figure 1. As these new technology-centered museums developed, they emphasized that science principals and applications can be more effectively shown in technological and interactive exhibits rather than a stationary display of artifacts or models.<sup>1</sup>

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<sup>1</sup> Victor J. Danilov, "Museums are Coming Alive: Innovative Approaches of Science Centers." *The American Biology Teacher* 38, no. 9 (1976), 526.



Figure 1  
Exhibit at Museum of Science and Industry in Chicago ca. 1970s  
*Photo Courtesy of Victor J. Danilov*

Despite the increasing popularity of interactive technology-based exhibits, many museum professionals questioned the use of technology in more traditional, artifact-based museums. As technology is becoming more readily available to the general public, museums face the challenge of presenting a new experience to patrons. The New York Museum of Modern Art conducted a study in 2013 which found that 74 percent of their visitors attended the museum with a mobile device already on their person.<sup>2</sup> If this is a tool which is easily accessible to most visitors, then why not take advantage of that? Museums have found ways for visitors to utilize their mobile devices to bring exhibits to life which ensures that their experience is more interactive.

The emergence of new information technologies has cultivated a growing demand to make collections more accessible by increasing the digitization of artifacts.<sup>3</sup> The role of museums has traditionally been to create an environment where people can go to learn by examining historic artifacts and artwork. With thoughtful interior design, museums guide visitors through exhibits which demand their attention and compel them to engage with the art or artifact. Some consider

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<sup>2</sup> Christine Nolan, "The Role of Technology in Museums." *AMT Lab @ CMU*, AMT Lab @ CMU, 14 July 2016, [amt-lab.org/blog/2016/4/the-role-of-technology-in-museums](http://amt-lab.org/blog/2016/4/the-role-of-technology-in-museums)

<sup>3</sup> Jeonghyun, Kim, "Building Rapport Between LIS and Museum Studies." *Journal of Education for Library and Information Science* 53, no. 2 (2012): 151.

being in the physical presence of the object important because the “aura of the object” affects how one interacts with it and how one thinks about it.<sup>4</sup> Without being able to share space with the object, some critiques of digital museums feel that the experience will be less meaningful.

In his article “The Development of Virtual Museums,” Werner Schweibenz hypothesizes about the possibility of the creation of completely virtual museums. Digital museums, according to Schweibenz, is a collection of digital objects in a variety of media and is unique in that it can be accessed through various means. While these virtual institutions became a necessity during the start of the COVID-19 pandemic in 2020, Schweibenz’s article reflects the trend in museum studies which suggests a need to completely digitize collections. This was something only a few museum professionals advocated for before the COVID-19 pandemic. After the pandemic, however, the value and necessity of digitization is undeniable. Schweibenz notes that a major aspect in the debate about digitization revolves around a fear it would eventually lead to a democratization of art and artifacts, which many encourage as it enables more people to access the knowledge once belonging only to museums. However, Schweibenz argues that democratization of artifacts questions the authority of museums and could possibly take away their traditional purpose which was to house and exhibit their collections to the public. As a critic of digital museums, Schweibenz believes no amount of digitization could replace the traditional role museums provide for their communities.

Critics of digital museums see a danger in overusing technology; they fear increased use of technology in general could bring negative side effects to developing youth such as shrinking attention spans, delayed social skill development and drops in fundamental literacy skills. Museums are critical to diversifying an educator’s tools and helping students who may not thrive in traditional classroom settings and allow for students to exercise other parts of their brain. Museums offer spaces for students to interact with exhibits which engaging them in innovative ways not possible in the classroom. Since museums have historically offered physical experiences where visitors can fully interact with artifacts, critics are concerned that incorporating digital elements will compromise the integrity of the museum experience.

Aside from the adverse effects technology can have on the learning capabilities of younger children, technology is quickly advancing at an unprecedented rate. As technology continues to push the boundaries, museums that attempt to implement modern technology in their exhibits will have to increase spending in order to fund these projects. As quickly as technology develops, yesterday’s innovations are obsolete. Curators risk installing expensive, interactive activities which could be outdated in a few short years.

While critics of digitization in museum studies offer a multitude of valid arguments, there seems to be more support for the inclusion of technology. Emerging new information technologies have put museums on the path to total or near complete digitization of their collections.<sup>5</sup> Support

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<sup>4</sup> Werner Schweibenz. “The Virtual Museum: An Overview of Its Origins, Concepts and Terminology.” *The Museum Review*, vol. 4, no. 1 (2019): 5.

<sup>5</sup> Jeonghyun Kim, "Building Rapport Between LIS and Museum Studies." *Journal of Education for Library and Information Science* 53, no. 2 (2012), 151.

of digitization is not exclusive to the twenty-first century. In 1976, an article was published titled “Museums are Coming Alive: Innovative Approaches of Science Centers” which was essentially a roundtable discussion of digitization in the museum industry. Specifically, this article discussed opinions in the field concerning the use of technology to form technology-based museums, which was entirely new at the time. The author, Victor J. Danilov, stated that “science and technology centers have broadened the educational and cultural roles of museums. They have made educational programming an integral part of museum operations.”<sup>6</sup> This article was written at a time when American applied science museums were gradually moving away from historic artifacts and operation models were central to developing new concepts in presentation. According to the article, while the exhibits may be non-traditional, the technology applications can be more effective than displaying artifacts or static models.

The appeal of technology in museums stems from the countless possibilities for curating interactive exhibits. Andy Lloyd, the special projects manager at the International Centre for Life in the United Kingdom, has said that the question is “not just about technology, but also what we wish to accomplish and the human aspect in the equation.”<sup>7</sup> Understanding how the visitors will interact with the exhibits is an equally important part of the decision to include any technology. Recently, Rik Panganiban, senior manager of digital learning at the California Academy of Sciences, spoke on the new reality of science centers. He noted that “it is not about having the *most* technology in your science center or museums; it’s about having the *right* technology to engage learners while they are in your institution, and to give them something to remember, or even engage with, once they have left your institution.”<sup>8</sup> The emphasis, according to Panganiban, is to ensure that the technology is used properly and not overused for the sake of having modern or technology-based exhibits.

Trends of the twenty-first century point towards creating virtual museums where all artifacts and exhibits can be viewed from an online database. The rapid spread of the COVID-19 virus expedited this process when more than 85,000 museums closed in March 2020, leaving museum professionals scurrying to find solutions.<sup>9</sup> To combat the profit loss associated with closing museums for an unknown period of time, many found ways to bring the museum and its artifacts online for all to enjoy. According to the Network of European Museums Organizations’ COVID-19 report, more than 70 percent of European museums increased their online presence with virtual tours and events. The report also states that two out of five museums reported an

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<sup>6</sup> Victor J. Danilov "Museums Are Coming Alive: Innovative Approaches of Science Centers." *The American Biology Teacher* 38, no. 9 (1976), 525.

<sup>7</sup> “How Much Is Too Much Technology in a Science Center or Museum, or Is the Sky the Limit? Does It Engage or Distract?” *Association of Science and Technology Centers*, 29 May 2020.

<sup>8</sup> How Much Is Too Much Technology in a Science Center or Museum, or Is the Sky the Limit? Does It Engage or Distract?” *Association of Science and Technology Centers*, 29 May 2020. Emphasis added.

<sup>9</sup> Kayla Voigt, “How Museums Went Digital in Response to COVID-19.” *Lendio*, 30 Sept. 2020.

increase in visits to their websites, ranging between 10 to 150 percent during the reporting time.<sup>10</sup> Museums across the United States also increased the number of digital services in order to accommodate the government’s stay-at-home orders. Below, Figure 2 illustrates the increase of digital services across all United States museums.

This data represents the amount of digital services which has increased since the first pandemic lockdown in March 2020. Online contests and quizzes, social media posts and online exhibitions have increased the most and draw more online activity from online visitors.<sup>11</sup> Marc Gilmcher, CEO of Pace Gallery, spoke on his institution’s decision to move online in an interview with *The Guardian* in April 2020. He explained that their “hope for these exhibitions is to use the voices of our dealers and curatorial team to create multi-media environments ...this is just the beginning of experiencing art through digital realms.”<sup>12</sup>

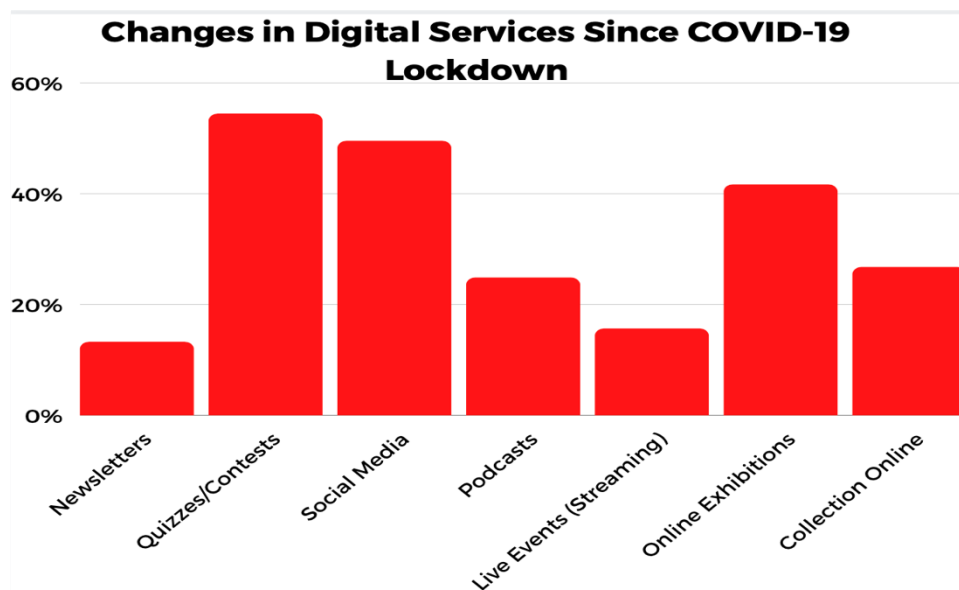


Figure 2

The creation of fully interactive online exhibitions marks a new era for museums as people are now able to experience what these institutions have to offer from anywhere, mainly free of charge. However, museums still need to generate income to maintain their educational programs

<sup>10</sup> 2020, *Survey on the Impact of the COVID-19 Situation on Museums in Europe Final Report*. Network of European Museum Organizations

<sup>11</sup> Figure 2. *Changes in Digital Services in COVID-19 Lockdown*. Created by author.

<sup>12</sup> Kayla Voigt, “How Museums Went Digital in Response to COVID-19.” *Lendio*, 30 Sept. 2020.

and care for their artifacts. According to the studies conducted by UNESCO and the International Council of Museums (ICOM), of the more than 85,000 museums which had to close in March 2020, 13 percent are at risk of never reopening their doors again due to the heavy financial losses incurred during this time.<sup>13</sup> According to the same study, it has been projected that the museum industry revenue will decrease 17.5 percent in 2020 as a result of travel bans and temporary closures to prevent the spread of the COVID-19 virus.<sup>14</sup> The Metropolitan Museum of Art offers exclusive access to tours facilitated by curators and art historians for \$300 per tour. The digital services which museums are able to offer may help limit the financial losses from the initial COVID-19 stay-at-home orders, but as the spikes in this viral outbreak prove to be unpredictable, the frequency of in person visitors may not be enough to warrant the costs of keeping their doors open to the public. Smaller museums will have to consider continuing completely virtual until they have the appropriate finances and staff to reopen to the public.

Museums have had to be creative with the online services they provide the public to stimulate interest as well as to continue to provide sufficient educational tools to students and educators alike. According to the National Survey of COVID-19 Impact on U.S. Museums, online educational resources for children, parents and teachers has increased 75 percent and resources designed for college students and adults has increased 54 percent.<sup>15</sup> The online resources and most virtual tours are offered free to the public which has allowed low-income school districts to utilize the magnitude of educational benefits museums offer without spending money on travel or admission. These resources are of great help to the millions of students who have had to adapt to online education during the COVID-19 pandemic.

Offering extra educational resources during such a challenging time is only one of the methods museums have used to help their communities during this unprecedented pandemic. Museums across the United States have also made their grounds available for COVID-19 relief related sites and have made their Wi-Fi available to community members. Since early March 2020, 14 percent of museums have taken efforts to help in the COVID-19 relief process and 7 percent have opened the Wi-Fi up to the public for free to aid students and adults alike who have to work remotely.<sup>16</sup> The services museums provide to their communities make them irreplaceable institutions. When museums' collections become completely digital, it does not erase the need to maintain a physical building with curated exhibits that the community can enjoy when they feel comfortable to do so.

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<sup>13</sup> Ibid.

<sup>14</sup> American Alliance of Museums. "National Snapshot of COVID-19 Impact on United States Museums (October 2020)." *American Alliance of Museums*, 30 Nov. 2020.

<sup>15</sup> *National Survey Of COVID-19 Impact on United States Museums*. International Council of Museums.

<sup>16</sup> Ibid.

Looking towards the future, virtual museums are now a reality due to the current COVID-19 pandemic and the public holds the power to decide the fate of many museums across the United States. While many may not think to attend a museum tour in the middle of a public health crisis, whether it be virtual or in person, museums are relying on public interest to draw visitors to the institution. The field of museum studies will have to adapt to this new reality and education for future museum professionals will need to incorporate new lessons including the art of virtual curation. As the use of technology is becoming more popular, proficiency in using information technology has become an imperative skill for museum field positions and it will demand a new type of museum professional.<sup>17</sup> Very few museum professionals would have imagined completely virtual museums to be a reality by 2020. Regardless, we are now in the age of virtual museums and how we will move forward into this new era will determine how museums will look in the next five, ten or twenty years.

The role of technology in museums has historically prompted a lot of debate between museum professionals and museum patrons. To some, museums should be free from technology and the visitor should focus their experience around the aura of the artifacts. That, arguably, is the traditional role of museums; to bring the public close to these historic artifacts, and exhibits to educate them about their historical importance. Now that technology is more prominent than ever, many institutions feel that including technology will only increase the interaction between the exhibit and the visitor. Where the ideal balance lies is the cause for the ongoing debate. Regardless of their hesitation of complete digitization, no critic of virtual museums argues that digitization has not rescued thousands of museums from closure during the COVID-19 pandemic. The creation of virtual museums has saved countless institutions from closing their doors permanently. They now are responsible for deciding how they, and the future of museums, will move forward, permanently reshaping traditional museum roles.

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<sup>17</sup> Jeonghyun Kim, "Building Rapport Between LIS and Museum Studies." *Journal of Education for Library and Information Science* 53, no. 2 (2012): 151.



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