



Article

Museums in the Future as Depicted in Popular Videogames: Looking Forward to Visit or Better Run-run Away?

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Abstract

This article relates to the envisioning of museums in popular videogames as a possible indicator of how museums may or may not function in the future. In terms of popular videogames, data were collected from the 'The Museums in Popular Videogames' research project at the Museology Lab, Ionian University, Corfu, Greece. Taking into consideration that science fiction literature is strongly linked with visualising aspects of the future, we use its genres to classify the museums in videogames. Twenty-nine videogames with forty-two museum settings were identified and discussed. Museums were grouped and analysed by four museum-oriented aspects to further understand their nature in future settings: location; the museum as a building and as an institution; the museum exhibits, their nature and their state of care or preservation; museum visitors that the game character may encounter. This research has indicated that the speculative creativity of videogame developers concerning museums in the future is likely to be diverse, within cityscapes, into the ocean or in the sky, fully functional with different interiors, preserving objects of the past and offering shelter to humans, or destroyed because of natural disasters, external attacks and/or human actions.

Keywords

Museums, Science Fiction, Future, Videogames

Introduction

This article relates to the role of museums in popular videogames as a possible indicator of how museums will be (or not) in the future. It aims to contribute to the ongoing discussion on the future of museums in the physical and the digital world. We focus on how the future of museum is represented in popular videogames. The spark of inspiration for this article was a presentation done by the authors for the "The Future Museum in the Future City" (authors, 2021) in Qatar, 2021. It is part of an ongoing research project on museums in popular videogames (MPVG), run by the Museology Research Laboratory of the Ionian University, Corfu, Greece.

Preliminaries and Related Work

Game studies, videogames and museums

Game studies comprise an interdisciplinary scientific field focusing on learning, art, playing, mass production and related phenomena (Mayra, 2008, p. 11, Sukhov, 2015; Chen & Hoffman, 2017). Games are based upon well-thought out scenarios with specific aims and objectives (Dannenberg & Fischer, 2017) and are recognised today as forms of learning tools. As videogames challenge players by putting them into a solution finding situation, players themselves take responsibility and build up experience: "games are not designed to teach players; they are designed for players to learn" (Stapleton, 2004, pp. 1-2). As a non-formal learning tool, games and videogames have gained credit and recognition as an academic field of study and research since the 1980s and 1990s (Aarseth, 2014, p. 185).

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Mayra offers a comprehensive study on research and videogames: videogames have existed since 1940, that they gained commercial success in the 1970s, and received academic research interest in the 1980s (2014, p. 331). In the 21st century, Vieira DaSilva highlighted the existence of museums in videogames (2010). In 2019, only 38 universities in the USA have introduced PhD programmes in Game Studies (Ruberg, 2019).

In museum exhibitions, visitors encounter games as museographical contributions to visitors’ experience, enhancing exhibition narratives and fighting museum fatigue (Hooper-Greenhill, 1994, pp. 7-8;Black, 2005, p. 285). In videogames, museums add to the game plot and enhance players’ experience. The MRVP project initiated the first database on the topic (the authors, 2019).

Futures Studies

As we look into scenarios of hypothetical futures for museums, we need first to explore the frame which is defined by the terms *futureology* and *futures studies*. Futures Studies is a scientific field studying the future and game studies can contribute to this as evident by a recent symposium on *Gaming Futures* (Milojević, 2017). But how can we research the future, which is yet to come? Sardar argued on four laws of the field of Futures Studies: 1) it is wicked: it investigates topics which are complex and playfully open-ended. 2) it is MAD, which stands for Mutually Assured Diversity and it describes those futures studies that need to consider the diversity of cultures on this planet with a wider sense comprising histories, knowledge systems and different ways of adjusting to change. 3) futures studies are sceptical, as certitude is impossible to attain, because the future reality of things is inaccessible to the human mind. 4) Futures studies are futureless, in the sense that they can be meaningfully assessed in the present only, as we have no knowledge of the impact of all futures explorations (Sardar, 2010). There is also a degree of probability, statistics and imagination (Giannopoulou et al., 1983, p. 22) towards addressing the future. In our case, we also need to consider fiction and relevant future genres.

Science Fiction and the Future

Science fiction is considered a good starting post for the future. This is evident by the science fiction literature of the past, which has introduced and/or foreseen later technological developments. Towards this, it is worth mentioning the work of John Huntington who has worked in the 1970s on the relation between the future and science fiction literature (Huntington, 1975). In his work, he has introduced the so called “elements of the future” in the science fiction literature and stressed that all attempts in literature for envisioning the future will remain fictions until materialised. In the world of videogames, we can approach museums as elements of the future and apply science fiction literature criteria. In science fiction literature, as a genre, there are some proposed models of classification of sub-genres, which we can use to categorise museums within videogames. To mention the main ones, we start with Masterclass and Noble Newman, which are two websites classifying the sub-genres of science fiction into eight categories (MasterClass_Staff, 2021; Newman, 2019); Tonya Thompson offers 33 sub-genres (2021); SciFi Ideas provide a 36 sub-genres distribution (Scifi_Ideas_members, 2022); and Wikipedia attempted an overview and provided 45 sub-genres (Wikipedia_contributors, 2018). These models have common grounds and differences, as you can see in the table below (table 1):

Table 1: Science fiction sub-genres as in the main sources.

Master Class Staff 2013	Newman 2013	Tonya Thompson 2021	SciFi Ideas 2022	Wikipedia contributors 2018
Fantasy fiction	Hard Science Fiction	Aliens	Hard Science Fiction	Africanfuturism
Supernatural fiction	Soft Science Fiction	Alternative History	Soft Science Fiction	Afrofuturism
Utopian fiction	Military Science Fiction	Alternate/Parallel Universe	military	Alien invasion

Dystopian fiction	Space Opera	Apocalyptic, Post-apocalyptic	Robot	Anthropological science fiction
Space opera	Steampunk	Biopunk	Social Sci Fi	Apocalyptic and post-apocalyptic fiction
Space western	Apocalyptic Science Fiction	Children Story	Space Opera	Biopunk
Cyberpunk	Parallel Words	Colonization	Cyberpunk	Black science fiction
Steampunk	Dystopian	Comedy	Steampunk	Christian science fiction
		Cyberpunk	Biopunk	List of science fiction comedy works
		Dying Earth	Nanopunk	Science fiction comedy
		Dystopia	Superhero	Cyberpunk derivatives
		Galactic Empire	Voyages Extraordinaires	Decopunk
		Generationship	Scientific Romance	Dieselpunk
		Hard Sci-Fi	Gothic SciFi	Dying Earth (genre)
		Immortality	Mundane fiction	Eco fiction
		Lost Worlds	Sci-Fi Horror	Edisonade
		Military	Sci-Fi Comedy	Feghoot
		Mind transfer	Sci-Fi Fantasy	Feminist science fiction
		Mundane Sci-Fi	Apocalyptic	Grotesquerie
		Mythic	Post-Apocalyptic	Hard Sci-Fi
		Nanopunk	Zombie Sci-Fi	Imaginary voyage
		Robots A/I	Alien Invasion	Interstellar war
		Science Fantasy	Alien Conspiracy	Libertarian science fiction
		Science Horror	Time-Travel	LitRPG
		Spleatstream	Alternative History	Mathematical fiction
		Soft Sci-Fi	Parallel worlds	Military science fiction
		Space Exploration	Lost worlds	Mundane science fiction
		Space Opera	Dystopian	New Wave Sci-Fi
		Spy Fi	Space Western	Post-Cyberpunk
		Steampunk	Retro-futurism	Resursive Sci-Fi
		Time travel	Recursive Sci-Fi	Science fantasy
		Utopia	Speculate Fiction	Outline of science fiction
		Young Adult	Slipstream	Scientific romance
			Pulp Sci-Fi	Skiffy
			Fan-Fic	Slipstream genre

			Erotic Sci-Fi	Social science fiction
				Solarpunk
				Space opera
				Science fictional space warfare
				Speculative evolution
				Speculative poetry
				Steampunk
				Tech-Noir
				Transrealism
				Space Western
				Widescreen baroque

"Genre in video games is a complex subject. Largely, this is because games are created as the hallmark of a specific franchise or IP (intellectual property) as opposed to being a standalone work. Additionally, the type of game produced is also treated as its own genre " (Monica Valentinelli, Director-At-Large Science Fiction & Fantasy Writers of America, personal correspondence Feb. 17 2022). From the lists above, we chose seven science fiction sub-genres that seem to us more appropriate towards classifying museums in videogames. The chosen science fiction genres (i.e. Apocalyptic/Post-Apocalyptic, Colonization, Cyberpunk, Dystopia, Science Fantasy, Science Horror, and Steampunk - retro-futuristic) are discussed in article 4 below.

The Museology Research Laboratory, Ionian University, Greece, and the MRPV project

The Museology Research Laboratory at the Ionian University (MRLIU) was founded in 2015. It belongs to the Department of Archives, Library Science and Museology of the Ionian University, Corfu, Greece. It aims to develop academic curricula and to conduct museum and heritage related research (Papaioannou & Grammenos, 2021). Within this frame the MRLIU has developed the “Museums’ Representations in Popular Videogames” (MRPV) research group, which is a PhD research project that uses digital videogames as resources to study museums. The MRVP project aims to record, examine and present museums which appear in popular videogames in terms of institutions, buildings, indoor spaces and collections. An early form of the project was presented in 2019 at MW19 conference in Boston (The authors, 2019). Up to 2021 more than 120 videogames have been identified with one or more museum settings appearing in their game play. Gaming platforms such as Playstation series and XBOX were considered as well as Stream and PCs, while mobile applications were excluded at this phase of the project. As the project progressed, we observed that a good number of games present museums in the future, usually in a futuristic imaginary setting. From this observation, we can reflect, analyse and extract a number of conclusions.

The methodology of the approach

In order to address the question on how the futures of museum is represented in popular videogames, we adopted the following methodological steps. We explored the MRVP database to locate videogames that encompass museums in a future setting by applying the selected science fiction Sci-Fi genres. Then we discuss all selected museums in terms of museum location, museum interior, exhibits and visitors as appear in the videogame setting. We conclude by main remarks and by proposing future work schemes.

Future museums in videogames in science fiction sub-genres: classification and discussion

In the MRPV database, we have located the following 29 videogame titles with 42 museums of future settings within the videogames. They are presented in table 2 by year of videogame release (Table 2). Moreover, we have used seven science fiction sub-genres to classify and discuss future-related museums in videogames. The sub-genres chosen are: 1) Apocalyptic/Post-Apocalyptic, 2) Colonization, 3) Cyberpunk, 4) Dystopia, 5) Science Fantasy, 6) Science Horror and 7) Steampunk (retro-futuristic).

Table 2: Ludography of museums in a future setting in popular videogames (source: MRPV project) and science fiction sub-genres attributed.

	Year	Videogame's title	Name of Museum(s)	Science Fiction Genre(s)
1.	1989	Batman: The Video Game	Flugelheim Museum	Dystopia
2.	1991	Captain Commando	the Museum	Cyberpunk
3.	1993	Megaman x 6	Museum Central	Cyberpunk, Science Fantasy
4.	1995	Megaman x7	The Robot Museum	Cyberpunk, Science Fantasy
5.	1997	Putt-Putt Travels Through Time	Museum of the Future	Science Fantasy
6.	2008,	LEGO Batman: The Videogame	the Museum	Dystopia
7.	2009	Call of Duty: Modern Warfare 2	the museum level	Dystopia
8.	2011	Batman: Arkham City (level 9)	Gotham City Museum of Natural History	Dystopia
9.	2013	Dead Rising 3	Fortune City Museum of the Americas	Apocalyptic/Post-Apocalyptic, Science Horror
10.	2013	Gears of War: Judgement	Museum of Natural History, Museum of Military Glory	Apocalyptic/Post-Apocalyptic, Cyberpunk, Science Horror
11.	2014	Skylanders Trap Team	The Night Museum	Dystopia, Science Fantasy
12.	2014	Wildstar Beta	The Imperial Museum, Dorian Walker's Thayd Museum and Artemis Zinn Museum	Cyberpunk, Science Fantasy
13.	2015	Dying Light	Harran City Museum-Mycoria Exhibition	Apocalyptic/Post-Apocalyptic
14.	2015	Fallout 4	Museum of Freedom	Apocalyptic/Post-Apocalyptic
15.	2016	BioShock 1-Remastered	Oceanographic Museum, Museum of Orphan Concepts	Colonization, Dystopia, Steampunk (retro-futuristic)
16.	2016	BioShock 2-Remastered	Museum Theme Park, Journey to the Surface exhibit, Making of Rapture city exhibit Memorial Museum.	Colonization, Dystopia, Steampunk (retro-futuristic)
17.	2016	Bioshock Infinite - Remastered	Hall of Heroes,	Colonization, Dystopia,

			Artists Stuck Gallery, Columbia Archaeological Society & Museum	Steampunk (retro-futuristic)
18.	2016	Ratchet & Clank: PS4	Insomniac Museum	Cyberpunk, Science Fantasy
19.	2016	Dishonoured 2	Aramis Stilton's Mansion, Royal Conservatory,	Apocalyptic/Post-Apocalyptic, Dystopia, Steampunk (retro-futuristic), Science Horror
20.	2016	Killing Floor 2	HoE Museum	Apocalyptic/Post-Apocalyptic, Science Horror
21	2017	ARK: Survival Evolved	Players' manually build museum	Dystopia, Science Fantasy
22	2017	Knack II	Museum at Night	Cyberpunk, Science Fantasy
23	2017	Bloody Zombies	The Museum	Apocalyptic/Post-Apocalyptic, Science Horror
24	2018	Call of Duty: Black Ops 4	Museum of Unnatural History	Apocalyptic/Post-Apocalyptic
25	2019	Riverbond	Museum of the Ancients	Cyberpunk, Science Fantasy
26	2019	Division 2 (Tom Clancy's)	American History Museum, Statue of Liberty Museum, Castle Clinton	Apocalyptic/Post-Apocalyptic
27	2019	Residence Evil 2 Remastered	Old Museum of Raccoon City (Now Police Station)	Apocalyptic/Post-Apocalyptic
28	2020	Final Fantasy VII-Remastered	Shirna Museum	Apocalyptic/Post-Apocalyptic, Dystopia, Science Fantasy
29	2020	The Last of Us Part II	Wyoming Museum of Science and History and historical building Museum	Apocalyptic/Post-Apocalyptic

Many videogames with museums fall under two or three science fiction sub-genres by speculation and they are not absolute. A discussion per science fiction genre follows in order of popularity:

Apocalyptic/Post-Apocalyptic (12 / 29 videogames): According to the Oxford University Press Lexico (OUP, 2021a) the term 'apocalyptic' is often used to describe the ultimate end of the world as we know it after an event of destruction. It originates to the Greek word *apocalypses* which literally means the uncovering, the revelation, and refers to the religious book of Revelation of St. John. Some of the factors that could bring an apocalyptic event could be a war, a virus, a pandemic or a physical phenomenon. A post-apocalyptic era could mean that life starts all

over from the beginning or that a society adapts to new standards of living. This category is the most populated genre in our context. A question that arises here is whether this is due to the players' eagerness as a consumer to buy games with such a theme, or because the developers consider it a popular theme in which they can develop and promote a storyline. Also, psychology indicates that people are attracted to bad news and events, as these events trigger unconscious mechanisms towards detecting danger and getting ready and prepared for it. This tendency has been exploited by the world of journalism and the loads of negative news (McIntyre & Gibson, 2016; Stafford, 2014). Moreover, similarly to literature as described by sci-fi writer Brandon Cornett, the reasons for this popularity are amongst writers [or game developers]: 1) an apocalyptic event allows building the world from scratch, 2) the end of the world as we know it seems to be highly intriguing topic and 3) it presents the real world but full of possibilities (2020). From the reader's perspective (McKenzie 2007): 1) it challenges the reader to accept something new - a new 'beyond the horizon' truth, 2) the reader can relate to it as a human and 3) it reflects real fears and anxieties (ibid).

In this category falls we have 12 titles:

1. *Gears of War: Judgement* (2013)
2. *Dead Rising 3* (2013)
3. *Dying Light* (2015) (*this is the genre that is repeatedly mentioned by it's developers since the game's announcement, Makuch, 2015*)
4. *Fallout 4* (2015) (*as per Chen, 2017; Sukhov, 2016, p. 667*)
5. *Killing Floor II* (2016)
6. *Dishonoured II* (2016)
7. *Bloody Zombies* (2017)
8. *Call of Duty: Black Ops IV* (2018)
9. *Residence Evil 2- Remake* (2019)
10. *Tom Clancy's Division II* (2019)
11. *Final Fantasy VII Remake* (2020)
12. *The Last of Us Part II* (2020) (*characterised as a "terrifying and beautiful post-apocalyptic gameworld" Reay, 2021*)

Dystopia (12 / 29 videogames): Dystopia frames societies of suffering and injustice, usually but not always after an apocalyptic event (OUP, 2021b). It is worth mentioning that the storyline and the mechanics in dystopias found in games tend to be more dynamic than dystopias described in literature or movies (Schulzke, 2014, p. 316), a fact that could be due to the participatory and interactive nature of gaming. Dystopia is a state that a city (including its museums) develops internally (Aldred & Greenspan, 2011, p. 481; Ruch, 2008, p. 138; Zonaga & Carter, 2019, p. 13, cities "turning" into a state of dystopia). In dystopias, the presence of the psychological element of disappointment is assumed. This leads to frustration and the desire to overcome it or the development of motivation to proceed the game (image 1.). In this category we have 12 titles:

1. *Batman: The Video Game* (1989)
2. *Captain Commando* (1991)
3. *LEGO Batman: The Videogame* (2008)
4. *Call of Duty: Modern Warfare II* (2009)
5. *Batman: Arkham City* (level 9) (2011)
6. *Play Skylanders Trap Team* (2014)
7. *Dishonoured 2* (2016)
8. *ARK: Survival Evolved* (2017)
9. *Final Fantasy VII - Remaster* (2020)
10. *Bioshock I* (2016) Remastered versions (Aldred & Greenspan, 2011, p. 481; Gibbons, 2011; Ruch, 2008, p. 138; Sicart, 2013, p. 239).
11. *Bioshock II* (2016) Remastered versions (Aldred & Greenspan, 2011, p. 481; Gibbons, 2011; Ruch, 2008, p. 138; Sicart, 2013, p. 239).
12. *Bioshock Infinity* (2016) Remastered versions (Aldred & Greenspan, 2011, p. 481; Gibbons, 2011; Ruch, 2008, p. 138; Sicart, 2013, p. 239).



Fig 1: Shinra Museum, Final Fantasy VII 2020, the dim, hidden lights and robust architectural environment, come into contrast with the three 'rebel' characters, who are about to visit it with the desire of improving their world. (Image: courtesy of the authors)

Science Fantasy (9 /29 videogames). This is the science fiction sub-genre where science and fantasy blend together to create a magical futuristic world (SFE_contributors, 2020). This magic may be of supernatural sources or super-advanced technologies that produce the same result (660 Prompts of Tonya Thompson, 2019). In this category we have nine titles:

1. *Final Fantasy VII Remake* (2020)
2. *Riverbond* (2019)
3. *Knack II* (2017)
4. *ARK: Survival Evolved* (2017)
5. *Play Skylanders Trap Team* (2014)
6. *Wildstar Beta* (2014)
7. *Putt-Putt Travels Through Time* (1997)
8. *Megaman x7* (1995)
9. *Megaman x6* (1993)

Cyberpunk (8 / 29 videogames). This kind of fiction pictures of dense, urban and confusing noir megapolises. "Cyberpunk did not domesticate the future; it treated the future as a god." (Clute, 2003, pp. 67-68). Moreover, it is linked with cyberspace, often used as another name for the Internet, and consists of a conceptual space created by new technologies (Whittaker, 2004, p. 351). In this category we have eight titles:

1. *Riverbond* (2019)
2. *Knack II* (2017)
3. *Ratchet & Clank: PS4* (2016)
4. *Wildstar Beta* (2014)
5. *Gears of War: Judgement* (2013)
6. *Captain Commando* (1991)
7. *Megaman x7* (1995)

8. *Megaman x6* (1993)

Science Horror (5 / 29 videogames): Science Horror is a hybrid genre which consist of the element of science fiction and horror. In this genre we commonly encounter subjects such as medical researches resulting in new diseases, aliens attempting to kill humans, artificial intelligence that revolts against its maker (Thompson, 2019; Thompson 2021). In this category we have five titles:

1. *Bloody Zombies* (2017)
2. *Dishonoured II* (2016)
3. *Killing Floor II* (2016)
4. *Dead Rising III* (2013) and
5. *Gears of War: Judgement* (2013)

Steampunk/Retro-futuristic (4 / 29 videogames): The term retro-futuristic describes how the future is envisioned from the past or how the future could be envisioned according to the available intellectual sources of the past. Note that the genre of Cyberpunk described above could also be considered as retro-futuristic (this subject has been analysed by Guffey & Lemay, 2014). Steampunk fiction is also linked with Science Fiction and Dystopia. It is a mix of early industrial technology, especially steam-powered machinery, with fantasy and science fiction elements (Barton & Stacks, 2019, p. 408). Its main source of inspiration seems to be the Victorian Era large cities of England; however, it includes other themes as well, such as landscapes were men live inspired from the design aesthetic of the 19th and early 20th Centuries (Scifi_Ideas_members, 2022) and it's historical events namely the American Frontier (Wikipedia_contributors, 2009). In this category we have four titles:

1. *Dishonoured II* (2016) (Zonaga & Carter, 2019, p. 74)
2. *Bioshock I* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).
3. *Bioshock II* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).
4. *Bioshock Infinite* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).

Colonization (3 / 29 videogames). This genre of futuristic fiction is about stories of settlers in new worlds, establishing themselves by domesticating their environment. There are several reasons for motivating or forcing this action, however the result remains the same: relatively new settlements in new grounds. *Bioshock I* (2016 Remastered), *Bioshock II* (2016 Remastered) and *Bioshock Infinite* (2016 Remastered) are falling under this sub-genre. Rapture city, is the imaginary settlement created at the bottom of Atlantic and is the setting for the first two Bioshock titles. There is Rapture city's reference also at the third one. Columbia is an imaginary floating city which moves above the clouds and is the setting for *Bioshock Infinite*. Both cities, Rapture and Columbia intend to settle populations -in this case- in no-man's land, thus 'colonies':

1. *Bioshock I* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).
2. *Bioshock II* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).
3. *Bioshock Infinite* (2016 Remastered) (Aldred & Greenspan, 2011, p. 483; Haselton, 2011, p. 30).

The above data offer a picture of diversity and variety in terms of the role of museums in future settings within popular videogames. We have spotted 42 museums within 29 videogames in a future setting in a time span of 31 years (1989-2020). We characterized these settings by using seven science fiction sub-genres. All sub-genres seem to appear throughout the 31-year timespan with the exception of Colonization, which classifies only in one videogame series title (the *Bioshock* one) in a single year (2016), meaning that developers do not really see museums in new environments to be domesticated by humans in the future. In terms of science fiction sub-genre popularity, the Apocalyptic Post-apocalyptic and the Dystopia sub-genres seem to be the most popular (12 and 11 videogames respectively), while the Science Horror, the Retro-futuristic Steampunk and the Colonization sub-genres (5, 4 and 3 videogames respectively) appear less attractive to game developers. Science Fantasy (9 videogames) and Cyberpunk (8 videogames) fall in the middle.

Discussing aspects of museums in future settings in videogames

Moving from the videogame context to specific museums withing the videogames, we analyzed four museum-oriented aspects in order to further understand the nature of each museum in future settings withing videogames. The first one is the location, the city or the environment that surrounds it. The second is the museum itself as a

building and as an institution. The third one looks at the exhibits, their nature and their state of care or preservation. The fourth one relates to the visitors that our character may encounter in these museums.

The location: The vast majority of museums in future settings within videogames are located within a dense cityscape. The cities, either in a peaceful state or after some post-apocalyptic event, resemble of mostly American metropolises. Two real cities are encountered: New York in *Division 2* (2019) (Unbisoft_team, 2021) and London in *Bloody Zobbies* (2017) (nDreams_team, 2017). Generally, real museums today are located within a city mostly for political reasons, such as: the number and the nature of visitors, the availability of a space and the intention of developing an area, the intention of its board of trustees or its patrons. The centre of a city is making it more accessible, therefore it makes the best in terms of visitor's numbers. We can easily imagine museums being in cities in the future as they have been within cityscapes in the past and present. For many, the cityscape is the museums' natural habitat and this is reflected in the selected videogames as well.

Apart from cityscapes, some museums in this research are in the wilderness, either in a forest (*Wildstar Beta* 2014, *ARK* 2017, *Call of Duty* 2018 and *The Last of Us* 2020) or in the desert (*Ratchet & Clank* 2016). In three cases, the museums are not on land but floating on the sky, above the clouds. In other words, the museums as buildings are lifted and help onto the air by some kind of unknown-today technology (*Bioshock Infinite: Hall of heroes* 2013, *Skylanders Trap Team* 2014 and *Putt-Putt Travels* 1997). This could seem a less viable possibility for future museums, as one could imagine the risks of sky museums in elevating platforms or flying buildings. Nevertheless, there is no limits to science fiction's creativity, therefore why not? To our knowledge, there is no example today that is near this concept. Museums on the clouds as seen in our videogames do present accessing challenges. In *Bioshock Infinite*, visitors commute to the museums through cable cars. In *Skylanders* and *Putt-Putt*, our character commutes to the museums through transporters or portals. Failure to the cable system or the energy which powers the transporters and the portals would mean cut of the main route of access to the museums. Moreover, failure of the technology that keeps these buildings on the sky, would mean either crush to the land and the complete destruction of the shells and all their contents, including visitors and collections, or disposal to the outer space. Concluding, where men cannot access by walking, they fully depend on technology to access to the place so called museum.

Other videogame museums in this research are located at the bottom of the ocean as in the cases of *the Museum of Orphan Concepts*, *The Life Up There*, *The Artist's Struggle Gallery* and *Rapture's Oceanographic Museum* in the *Bioshock* 2013 series. An interesting scene comes from *Bioshock 1* 2013: in a museum at the bottom of the ocean: Rapture City's Oceanographic Museum, visitors observe a whale's skeleton exhibit while a real whale passes by outside the museum windows observing the visitors. At the moment, scientific stations or underwater hotels and restaurants with direct access the surface have started appearing in humanity's creative horizon (e.g. Snøhetta's underwater restaurant in Norway, the the Subsix Club, the Ithaa or the Hurawalhi underwater restaurant in the Maldives), but no actual museums. What seems closer to the underwater museums presented in *Bioshock I* and *II* (2016) is the Australian Underwater Discovery Centre to-be-completed in 2023 (Jincy, 2021). The Centre has direct access from the surface of the sea and aims to be the world's largest natural, underwater marine observatory. Underwater institutes are protected by thick glass which keeps water pressure from destroying their contents. Failure of this glass means extreme mechanical pressure and complete destruction. A museum in the future into the sea has its challenges.

There is also another category, less likely to have in the future: museums in the outer space to be colonized by humans. (*Riverbond* 2019). These museums relate to pure science fiction, but one never knows! Once the space is colonized, then we expect to have museums there too! To conclude, future museums within or near cities appear a more realistic prospect than museums in non-habitable environments, such as the clouds, deep ocean or perhaps the space. Finally, we note that four games do not offer an outside view to the player, therefore we can only assume the location (*Megaman x6* 1993 and *Megaman x7* 1995- although we can assume that the two respective museums presented: the Central Museum and the Robot Museum, are located in Mega City of Mega Man Universe, *Killing Floor II* 2016 and *Call of Duty: Modern Warfare II* 2009).

The museum itself: There are two approaches for assessing the museums: one is the museum as a building and the second one is the museum as an institution and whether it is still used at the future setting as defined from each videogame. Museum interiors in this research vary from old and abandoned to modern and luxurious. Museums in six of the games are heavily inspired by darkish gothic, art nouveau, art deco, and renaissance interiors (*Batman* 1989 and 2011, *Gears of War 2013* x 2 museums, *Dishonoured 2* 2016 and *Residence Evil 2* 2019). Similar interiors, but not so dark in terms of exhibition design and atmosphere, can be seen in three more games (*Dead Rising 3* 2013,

Fallout 4 2015, *Bloody Zombies* 2017). In nine out of 28 videogames, museum interiors are clearly recognisable, even without interpretation, signs or explanations. This is not surprising as large world class real museums have similar interiors. Large, monumental, and well-maintained interiors (at least at some time of their existence) are encountered in *Call of Duty* 2009, *Bioshock Infinite* 2016, *Dying Light* 2015, *Killing Floor 2* 2016, *Knack 2* 2017 and *Division 2* 2019. Extremely futuristic interiors made of glossy metal and other unknown substances are seen in *Putt-Putt Travels Through Time* 1997, *Wildstar Beta* 2014, *Captain Commando* 1991, and *Skylanders Trap Team* 2014. Industrial style interiors, aligning with Steampunk and Retro-Futuristic influences, can be seen in the *Bioshock Remastered* series and *Ratchet & Plank* 2014. Other settings relate to immersive museum lecture theatres that take visitors to real travels to another place (i.e., *Final Fantasy VII Remastered* 2020 or *Megaman x6* 1993). Also, we see robotic museum guides in futuristic scenaria (i.e. *Putt-Putt Travels Through Time*, 1997), an advancement already seen in real museums today (see Carvajal, 2017).

Presenting a museum interior relies on the artistic approach of the developers of each game. A valid debate would be whether the developers want to provide a stereotype passed and easily recognisable setting, or if they want to use the setting of a museum to demonstrate their creative abilities- similarly to today's trend amongst architects with the so-called signature buildings. Museum interiors in videogames, with some exceptions (*Skylanders Trap Team* 2014 and *Wildstar Beta* 2014), tend to represent the present rather than the future, or a future with recognisable museum stereotypes similar to the present.

In answering the question: whether the museum is still in use in its future setting, we have made the following observations: In 22 out of 42 museums appear to be still in use and 20 museums are not. The result is rather balanced. For the museums that are still in use, we need to note that this is only until our character enters into the space.

Again, half of the in-use museums (8/22) are offer a peaceful to walk around to the end of the story. The other half (14/22) of well-maintained and polished museums reserve a sudden change of this peacefulness when our character arrives. This style, from a safe walk around to a conflict builds up they player's anticipation, pumping up adrenaline for what comes next- in other words: spicing up the gaming experience. Conflict varies from a one-to-one mild battle, to a heavy bloodshed. This is inclined along the lines of a specific the gameplay or intending to engage the player, rather than a prediction for the future museum. The 20 not-in-use museums which are defined by run down, warn spaces, damaged surfaces of all scales, nature's overgrown and flawed building shells. In all cases, these museums are affected by external conditions, whether this is a natural disaster, a rebellion or a post-apocalyptic event.

In conclusion, the rather balanced numbers of museums in use (22) and museums out of use (20), and should be perceived as a more creative spectrum of what could possibly come in the future, rather than a dogmatic attempt of a prediction.

The exhibits: In terms of exhibits and collections, we observe two approaches. The first relates to the content of the collections themselves, and the second to the physical condition of exhibits and collections once the player encounters them. Focusing on the collections themselves, we can identify depictions of real collections, such as Dutch Masters' paintings in *Batman* 1989 and schematic versions of ancient Egyptian cat idols in *Bloody Zombies* 2017. We also see dinosaur skeletons, marble sculptures, archival tools, military dioramas, and modern art exhibits. There are also some unusual or unidentified objects as exhibits, which serve as props from the game itself or as contributions to an intended bizarre atmosphere (*Skylanders Trap Team* 2014, *Ratchet & Clank* 2016, *Riverbond* 2019 and *Wildstar Beta* 2014, *Final Fantasy VII Remake* 2020). In short, despite the fact that the games present future fictional museums, the majority of their collections are meant to create a familiar museum environment in a futuristic context, rather than to surprise with the unknown. The second approach relates to the physical condition of the collection and the way players interacts with them. Eleven out of 29 videogames maintain collections in a decent condition throughout the gameplay. In the rest 18 videogames, little respect is given to exhibits, as they represent dangerous and survival settings where objects are sacrificed to keep players alive. Objects in these settings are vandalised and destroyed either before players encounter them or during (and because of) players' presence and actions.

The visitors: Within the list of selected videogames there is only one instance of a museum where visitors appear as in reality. It is in the Columbia Archaeological Society and Museum (*Bioshock Infinite* 2013, image 2) where a number of visitors wonder around the exhibition space, observing and commenting on the exhibits as real visitors in real museums do. All visitors in this setting appear to be of the same age and social status, namely young and

middle-aged adults, both men and women, dressed in neat early 20th century American outfit in warm and pale colours that interestingly fit well with the exhibits and atmosphere around them. In five videogames our game character walks totally alone in an museum empty from visitors (*Museum of Orphan Concepts at Bioshock Remastered 2013*, *Gears of War Museum of Natural History 2013*, *Wildstar Beta 2014*, *ARK:Survival evolved 2017*). This gives the opportunity to players to spend time in the museum, walk around and gain and absorb information in their own pace. This ‘tranquillity’ is intentional, because it creates a stronger bond of the player and the space we are walking in. The opposite effect happens when villains and enemies are attacking our player: the instinct of survival does not allow time to get familiar with the surrounding, especially when the conflict takes place the very moment we enter in the museum. In two videogames (*Skylanders Trap Team 2014* and *Putt-Putt Travels 1997*) the game character has a friendly companion who offers advice on what to do in a mentoring manner in order for the player to advance in the game. In terms of overall atmosphere, that depends on the overall environment and the gameplot: *Putt-Putt 1997* brings a bright and jolly future targeting younger audiences and *Dead Rising 2013* poses a dark and life-threatening setting for older audiences.

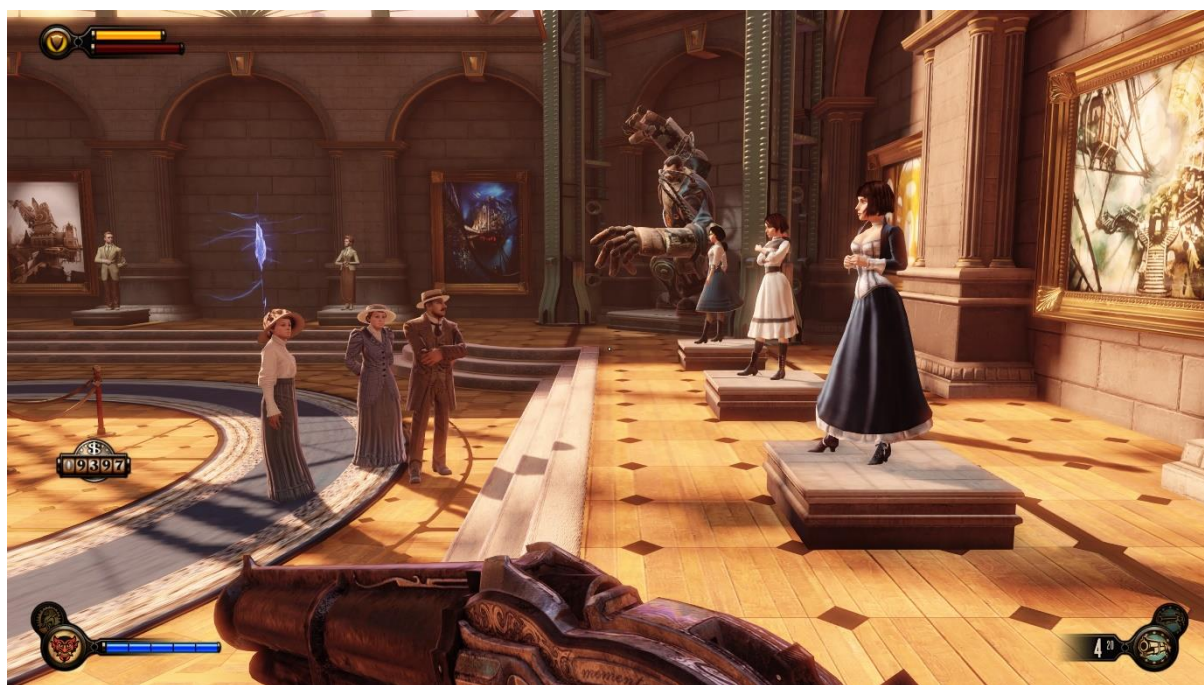


Fig 2: The Columbia Archaeological Museum and Society, *Bioshock Infinite Remastered 2016*, were peaceful visitors walk around and observe the exhibits. (Image: courtesy of the authors)

In 20 videogames, the museum “visitors” engage in much more intense experiences. Furious rebels, seriously upset aliens, genetically modified lunatics, robots and zombie infest museum galleries and try to terminate the life of our game character in violent ways. The zombie situations are very popular in videogames, especially after *Residence Evil Series* from 1996 which revived and popularise videogames containing zombie threats. Zombie is a form of a cultural artifact in popular culture consistently reused and recycled in videogames. According to Nathan Hunt, amongst textual materials classification, the zombie genre is one of the easiest to decide (2015, p. 107). In these intense circumstances, museums become well-defined spaces of shelter from external attacks, breached by foes, providing the game character with spaces to hide and defend ourselves. In a wider sense, one may argue that museums will keep having a strong element of protection: they protect and preserve people from threats and help towards the survival of our kind, even if not strictly in an intellectual and cultural sense.

Discussion

Trying to predict and to know the future is an intriguing and impossible endeavour. As people tend to lean more towards the intriguing aspect, we would argue that based upon 42 museum appearances in 29 videogames in the last three decades the museum futures relate to (a) museum buildings not on land (but on the sky, in the ocean, on other planets), (b) places of different interiors and for object preservation, (c) a destruction, part of a catastrophic event (war, external attack, natural disaster, a pandemic), and (d) shelters to humans (who are hunted by others, e.g. aliens and zombies). Object preservation and different exhibition settings relate to what most have in mind as a key museum function and appears in every known museum definition to date, including the famous one of the International Council of Museums: a museum “acquires, conserves, researches, communicates and exhibits” (ICOM 2022). It seems that museums are expected to keep serving this need, acting as a link to the past and its interpretations. In terms of future museum buildings and their location, having impressive museum areas and settings in unexpected places has already been pursued. Museums built onto and into the sea are already a reality as indicated by underwater cultural heritage preservation (Hawley et al., 2019) and museum building built on the sea, e.g. the Museum of Islamic Art in Doha, Qatar (Ferwati, 2013). There is currently no museum on the air or in the space, but discussions on approaching space debris as heritage have already started (Koren, 2018). But the most common future museum setting in videogames is post-apocalyptic and dangerous for humans in need of a space to protect them from hunters in the form of zombies, aliens, and other forces. This pessimistic prospect offers an interesting videogame setting, an intriguing new videogame actuality to be explored by players, a set of problems to be resolved by the players, and a brain exercise towards detecting and dealing with danger. As major catastrophes and problematic events are not unlikely to come (the recent COVID-19 pandemic that led to museum closures confirms this), the futures of museums and heritage sites being destroyed by a war and conflict, e.g. museums in Iraq (Marston, 2018), in Syria (Bauer, 2105), in Kosovo (Herscher & Riedlmayer, 2000), or a natural disaster and/or climate change (Siegel et al., 2013) are to be expected.

Conclusions and Future Work

In the 19th century, Jules Verne has created Nautilus in his ‘Twenty Thousand Leagues Under the Sea’ famous science fiction book, predicting traveling under the sea, which was not possible at his time. Indeed, the collective creativity of videogames on how they see museums in the future can be as accurate as speculative futuristic literature. This research has shown that museums in future settings in videogames appear to have diversity in their characteristics. We spotted 42 museums in 29 videogames from 1989 to 2021 and classified them by using the most common science fiction sub-genres. Most of museums in videogames operate in post-apocalyptic dystopic settings, in cityscapes (most of them destroyed), but also on the sky, in the ocean, on other planets, with different interiors, preserving objects of the past and offering shelter to humans in need to survive from external enemies (including repressive forces, aliens and zombies) and collections destroyed by natural and human factors, such as natural disasters, wars and external attacks. Without forgetting that these museum settings have specific functions in videogames (i.e. a certain role in the plot of the game), we can argue that in the last three decades game developers have devoted time, ideas and energy on including museums in their videogames of future settings. Future work will offer more insights into these creative processes and confirm (or not) current predictions of museum futures.

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