# Beyond simple nostalgia:
## Transforming visitors' experience of retro-gaming and vintage computing in the museum

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## Abstract

Retrokultur bliver ofte kritiseret for en ahistorisk og æstetiserende tilgang til fortiden, og nostalgi bliver anset for at være en udbredt attitude inden for domænerne retrospil og antikke computere i form af et romantiserende syn på fortiden. Derfor kan retrospil og antikke computere virke som upassende emner for museer, som varetagere af Historien. Men hvad nu hvis nostalgiens affektive appel kunne udnyttes, og den romantiske tilgang til fortiden samtidig modereres af mere refleksion? Denne artikel fokuserer på den mulige transformation af de museumsbesøgendes simple nostalgi til refleksiv nostalgi gennem deltagende tilgange til udstillingsdesign. Den redegør for to udstillinger af retrospilkultur på Mediemuseet med to forskellige deltagelsesstrategier: 1) Give de besøgende mulighed for at interagere med den udstillede teknologi ved at spille spil. 2) Inkludere fans af retrospil i en samskabende designproces af udstillingen. Vi argumenterer for, at der er et anseeligt potentiale for affektivt engagement af museumsbesøgende i retrospilkultur, som kan tjene som en platform af interesse for yderligere refleksion over spilkultur før og nu. Interviewene viser, at interaktiviteten i at spille spil samt den taktile omgang med originale spilartefakter er effektive igangsættere af refleksion hos de besøgende.

Retro culture is often criticised for its ahistorical and aestheticized assembling of the past. Nostalgia is considered a prevalent attitude in the domains of retro-gaming and vintage computing in terms of a romanticising view of the past. Thus, the phenomena of retro-gaming and vintage computing can seem unfit for museums as arbiters of History. However, what if the affective appeal of nostalgia could be harnessed and the romanticised approach to the past simultaneously tempered with more reflection? This article focuses on the possible transformation, via participatory exhibition design, of museum visitors' simple nostalgia into reflective nostalgia. The article accounts for two exhibitions of retro-gaming culture at the Media Museum that deployed two participatory approaches: 1) Enabling the visitors to participate by using the technology on display and playing games. 2) Including retro-gaming fans in a co-creative exhibition design process. We argue that there is a considerable potential for affective engagement of museum visitors in retro-gaming culture, which can serve as a platform of interest for scaffolding further reflection on gaming past and present. Interviews with visitors show that the interactivity of playing games and the tactile handling of original gaming artefacts are effective in fostering visitors' reflection.

## New museology, participation and inclusion of popular culture

Since the advent of the New Museology (Vergo 1989) and the critique it offered of the museum institution many museums have been engaged in fostering inclusive practices facilitating diverse forms of cultural participation by communities and visitors (Simon 2010). At the general level, the aim has been to transform the museums into more democratic institutions by embracing elements, people and voices previously excluded from the museum space. This is part of a societal trend where participation is introduced in diverse areas (Carpentier 2011; Kelty et al. 2015). At the concrete level, this ambition manifests itself in a multiplicity of museum projects labelled as 'inclusive' or 'participatory'. Nevertheless, the transformations enabled by such projects are often of a superficial nature. The power-relationship between institution and visitor remains fundamentally the same (Bennett 1998; Boast 2011; Lübker Forthcoming). However, theoretically-funded critical accounts of participatory projects at museums can be accused of focusing exclusively on the production side of the equation and ignoring the consumption side of the process (Mason 2007: 25). In order to determine if the participatory transformations initiated on the production side have effects on the consumption side we must also investigate the experience and meaning-making of museum visitors. In addition, the nature and degree of participation is seldom specified and thus participation is in some cases confounded with democratization (Kelty et al. 2015). If attendance to a given exhibition is the minimal form of participation, then we must specify the degree of further participation offered to the visitors through an evaluation of the exhibition's design.

This article will account for two recent exhibitions of artefacts related to retro-gaming and vintage computing at the Media Museum (Odense, Denmark). These exhibitions can be considered inclusive in the sense that the gaming and retro culture, part of recent popular culture, have formerly not been considered a relevant topic of the public museum. Retro culture is often criticized for its ahistorical and aestheticized assembling of the past and a prevalent attitude of nostalgia resulting in a romanticizing approach to the past (Jameson 1991; Hewison 1987). Keightley and Pickering (2012: 152) coins the term 'retrotyping' for this reduction of the past to a limited set of stereotypes. Accordingly, the phenomena of retro-gaming and vintage computing can seem unfit for museums as arbiters of History. However, studies show that the memory work taking place at memory sites such as museums is a meaning-making process in which visitors actively contribute with their emotional engagement even in a mood of nostalgia (Cashman 2006; Keightley and Pickering 2012; Schiavo 2013; Smith 2006). In this article, we develop on nostalgia as a certain kind of meaning-making often associated with the recent past by looking at the nostalgia experienced by different generations of museum visitors with and without a lived memory of the gaming culture being presented. Mortensen and Madsen (2015) suggest using the distinctions between *simple*, *reflexive* and *interpretative* nostalgia introduced by Davis (1979) as a framework for a more nuanced understanding of nostalgic experiences in a museum context. In addition they follow Boym (2007) in attributing a creative potential to a reflective nostalgic approach that can counteract rather than replicate the retrotyping of simple nostalgia. We find this framework useful for interpreting visitor accounts of nostalgic experiences in the two exhibitions under consideration here. The first exhibition was a traditional curator-led project focusing on the evolution of the car game genre, while the second exhibition on 1980s computer culture was co-created in collaboration with a group of fans, the Space Invaders, a team of 8-bit musicians who are inspired by retro-gaming aesthetics in their creative practice. Rather than just a strategy for re-enchanting past computer culture in an exhibition (simple nostalgia) this approach sought to transform the immediate nostalgic experience of visitors (reflective nostalgia) (Knudsen, Christensen, and Blenker 2015: 2).

What became apparent with the first exhibition on car games was the enormous appeal of having playable objects in the exhibition and the immediate simple nostalgic reaction of many visitors to the vintage arcade machines and games. However, despite pointing to the correlation between racing games and risqué

behaviour in traffic the exhibition apparently did not elicit further reflections. Thus, afterwards we wondered how we could transform the simple nostalgic experience of the visitors by enabling reflection. Boym locates a creative potential in reflective nostalgia (Boym 2007). Therefore, we strategically selected a group of co-creators for the second exhibition. The Space Invaders fitted the bill as their music is inspired by retro-gaming culture and thus the creative potential is evident in their praxis. In relation to the first exhibition we expected that the second co-creative approach would enable the visitors to move beyond simple nostalgia and experience reflective nostalgia - especially visitors of the 2. generation without lived experience of 1980s computer culture. Thus, the research question, directing our inquiry is: Did the participatory strategies on the production side of the Space Invaders exhibition project enable transformations of the visitor experience on the reception side. Did it enable reflective nostalgia, rather than simple nostalgia?

The structure of the article is as follows: In the first section, we elaborate on our conceptual framework to be followed by a section which accounts for the two exhibitions using the seven dimensions of participation suggested by Kelty et al. (2015). Before the findings and discussion section, we have a brief section on method and data collection. The findings and our discussion of them are integrated and presented in two thematic sections. The article concludes with some remarks on the implications of our findings and suggestions for future work.

## Participatory practices and forms of nostalgia

According to Carpentier (2011) 'participation' is a floating signifier that has travelled from the realm of institutional politics into other domains such as museums. Participation is a struggle to minimize or maximize equal power relations. Within the museum domain, the dominant form has been one of representation where curatorial experts decided on what went on display and how to exhibit this. However, since the 1990s participatory forms are becoming more common within museums (Carpentier 2011: 62). Simon (2010) constructs a typology of four participatory forms, ranged according to a minimalistic-maximalistic continuum. In the *contributory* form of participation, visitors can supply content, but the content is subject to institutional rules. In the *collaborative* form, the institution sets the project frame and staff works closely with participants during the project. In the *co-creative* form, the institution offers participants more autonomy by giving them tools to lead the project while staff supports their activities and help them move forward. In the *hosted* form, the institution provides participants with resources and some general guidelines and then lets them do their own thing without interference (Simon 2010: 190–191). As participanting visitors can be assigned different roles along this continuum from just attending (minimal) via interacting with and contributing to the displays (onto making the museum a platform for visitor activities/decisions (maximal).

Participation is often regarded as inherently beneficial and thus de-contextualised from the concrete participatory practices and their impact on participants (Carpentier 2011). In order to make normative claims for the benefits of participation, however, we need a framework for description and comparative analysis of participatory processes (Kelty et al. 2015). Based on an extensive review of the literature on participation Kelty et al. (2015: 476) suggest a framework of seven dimensions that encompass the complexity of the concept:

1) Educative Dividend. The degree to which participants learn something valuable, especially how to participate.
2) Goals and Tasks. The degree to which participants not only undertake tasks but also help set goals.
3) Resource Control. The degree to which participants get control of resources, not merely produce them.
4) Exit. The degree to which participants have the capacity to leave without penalty and with resources.

5) Voice. The degree to which participants have opportunities to 'speak back' in order to influence outcomes.
6) Visible Metrics. The degree to which there are empirical demonstrations of the connection between participation and outcomes.
7) Affective/Communicative Capacity. The degree to which participants experience collective effervescence and the experience of being part of an audience via communication, affect, affiliation and sociability.

This framework enables us to evaluate and compare the participatory approach of the two exhibitions to reveal the differences between the participatory role of visitor and co-creator. This comprises our analysis of the production side of the exhibitions. In order to determine if the co-creative approach succeeded in scaffolding reflective nostalgia we also looked at the reception side of the second exhibition.

Nostalgia, our other key concept, can be defined as 'an affective process that can accompany autobiographical memories' (Barrett et al. 2010: 390). Nostalgia is not value-neutral, but a positive and longing disposition towards the past (Davis 1979: 15). Davis further nuances the concept by distinguishing between *simple*, *reflexive* and *interpreted* nostalgia: Simple, first-order nostalgia is the belief that things were better before than now (ibid: 17). In second-order, reflexive nostalgia, the nostalgic feeling is accompanied by empirically oriented questions concerning the truth and accuracy of the nostalgic memory (ibid: 21). In third-order, interpretative nostalgia, the nostalgic feeling is accompanied by reflections that move beyond issues of historical accuracy and addresses the nostalgic experience itself (ibid: 24).

We find this three-tiered definition of nostalgia useful when considering a counter-argument to the legitimate criticism levelled at nostalgic approaches to history and heritage. The allegations of retrotyping the past apply to simple nostalgia, but if we can scaffold reflective and interpretative nostalgia, we can avoid this retrotyping while retaining the engaging potential of nostalgia. Increased reflection, however, can undermine the ability to experience nostalgic feelings at all (ibid.).

## Method and data collection

The data underlying this inquiry consists of transcriptions from five semi-structured group interviews conducted in February 2013 just before the Space Invaders exhibition closed: one interview with the curator and the three Space Invaders responsible for the exhibition and four exit interviews with groups of visitors to the exhibition. Three groups were random Danish visitors and the fourth was a group of exchange students from other European countries. Figure 1 shows an overview of the five interview groups. In the findings section number and capital letter will identify each interviewee statement designating the group and individual within this group, respectively. Each interviewee is categorized according to whether they were young in the mid-eighties, (the C64 computer was released in 1982). So generation 1 were born between 1960 and 1980 (5 interviewees); generation 2 between 1981 and 2000 (11 interviewees); generation 3 were born after 2000 (3 interviewees). We had one elderly interviewee who we consider as generation 0.

| | Group 1 (Space Invaders) | Group 2 | Group 3 | Group 4 (in English) | Group 5 |
|---|---|---|---|---|---|
| | 4 interviewees | 3 interviewees | 6 interviewees | 6 interviewees | 2 interviewees |
| A | Curator 1.G | Interviewer 1 | 1.G | Interviewer 1 | Interviewer 1 |
| B | Space Invader 1 1.G | 0.G | Interviewer 1 | 2.G | 2.G |
| C | Space Invader 2 2.G | Interviewer 2 | 3.G | 2.G | Interviewer 2 |
| D | Space Invader 3 1.G | 2.G | 3.G | Interviewer 2 | 2.G |
| E | | 2.G | Interviewer 2 | 2.G | |
| F | | | 1.G | 2.G | |
| G | | | 1.G | 2.G | |
| H | | | 3.G | 2.G | |

**Figure 1**: Overview of interviewees from the group interviews categorized according to generation.

Before the exit interviews, the visitors were issued pen and paper and asked to take five minutes to collect their thoughts about the exhibition they had just visited. The interviews were conducted and transcribed by two research assistants from the University of Southern Denmark. This sample is not large enough to say anything definitive about meaning-making in general for the entire population of visitors to the exhibition. However, the particular statements from interviewees contribute to the body of knowledge of visitor meaning-making in museum exhibitions, in particular our understanding of cross-generational memories, and can serve as illustrations of concrete meaning-making that can inform future exhibition design practice.

## Two exhibitions: From a curator-led presentation to a co-creating with fans

In 2009 the exhibition *Vroom! Vroom! Pedal to the Metal it's only a game* was the first exhibition on videogame culture at a public museum in Denmark. The exhibition on the evolution of the car game as a genre featured arcade machine classics such as *Pole Position* (1982) and *Outrun* (1986) and an assortment of game consoles ending with *Mario Kart* (2008) on the Wii console. The most notable aspect of the exhibition was that every artefact was playable. On the walls surrounding the artefacts were displayed a selection of reproduced historic ephemera such as advertisements, posters etc. The underlying theme of the exhibition, ironically reflected in the title, was the point made by recent gaming studies that you become a more reckless driver by playing racing games than by playing other kinds of games (Beullens, Roe & Van Den Bulck 2008; Fischer et al. 2007; Fischer et al. 2009). The visitors' fascination with the old arcade games and the simple nostalgia they elicited overshadowed this critical point, however. The exhibition was a traditional curator-led project and apart from playing the games, visitors could not participate or contribute to the exhibition.

The second exhibition from 2013 was entitled *Space Invaders over Brandts*. Brandts is the old cloth factory in which the Media Museum is located and 'Space Invaders' referred both to the iconic arcade game but also to the team of 8-bit musicians that invaded the museum space as fan curators. The exhibition was conceived as a co-created project which Simon considers as a more involving form of participation in museums (Simon 2010). The trio of Space Invaders consisted of two men around 40 years old and a younger female in her early twenties. Thus, they represent both the 1. generation with lived memory of 1980s computer culture and the 2. generation without such lived memory. As 8-bit musicians, and fans of C64 culture, the Space Invaders find inspiration in 1980s computer culture in the creation of new music. Their role has changed from media consumers into active media producers (Jenkins 1992; Sullivan 2013).

The exhibition consisted of objects and ephemera depicting the computer culture of the 1980s. As an immersive experience, the interior of a teenage boy's room had been recreated in a corner of the exhibition space replete with a fake leather couch, David Bowie posters, Star Wars figures, record player and LPs and of course, a C64 connected to a monitor. Visitors could load different classic games on the C64. The other playable elements of the exhibition were original arcade machines, *Donkey Kong* (1981), *Outrun* (1986) and *Pac-Man* (1980), and an emulated version of *Space Invaders* (1978) connected to a projector displaying the game interface on a wall. Concurrent with the exhibition the Space Invaders ran a series of related events such as concerts, *Hama Bead* workshop and a *Donkey Kong* highscore event. However, this inquiry focuses exclusively on the exhibition and the meaning-making of visitors within it.

The participatory strategies in the two exhibitions were threefold: First, both exhibitions were inclusive in content by displaying recent (popular) gaming culture; second, both exhibitions were interactive by allowing the visitors to play on most of the games on display, offering visitors the opportunity to participate as a player; third, the Space Invaders exhibition invited in a group of fans to participate in the production process. Based on the opportunities for participation and the nature of the participatory activities present in the two exhibitions we have evaluated the degree of participation according to the seven dimensions suggested by Kelty et al. (2015) using a Likert scale ranging from none, low, some, high and very high.

| Dimension of participation | *Vroom! Vroom!* | *Space Invaders over Brandts* | |
|---|---|---|---|
| | Visitors | Visitors | Space Invaders |
| Educative Dividend | Some | Some | Very high |
| Goals and Tasks | None | None | Very high |
| Resource Control | None | None | High |
| Exit | Very high | Very high | Low |
| Voice | None | None | Very high |
| Visible Metrics | Low | Low | Very high |
| Affective/Communicative Capacity | Some | Some | Very high |

**Figure 2**: Evaluation of the degree of participation according to the seven dimensions suggested by Kelty et al. (2015).

The Space Invaders project had two types of participants: Regular visitors and the Space Invaders themselves invited to co-create the exhibition, while the Vroom! Vroom! exhibition only had regular visitors as participants. What is evident from the evaluation is that the participatory role offered to regular visitors in the two exhibitions is similar. They have no influence on goals and resources, and no way of talking back. The participation in the exhibition consists of playing the games provided. In this sense, visitors are offered an educative dividend and an

affective capacity by participating in different gameplays. By playing a game they also briefly influence the outlook of the exhibition (visible metrics). This superficial participation, however, enables the visitors to exit the participation at any time (even in mid-game) without any consequences. Still, compared to the contemplative role offered the visitor by a display of objects behind glass, the participation offered the visitors through gameplay generates more autonomy and influence on the museum experience. Contrary to the regular visitors, the Space Invaders had a high degree of participation on all the dimensions except exit, as the project would have foundered if they had walked away before the opening of the exhibition. For example, they handled all the purchases of artefacts to the exhibition within the overall budget.

## Findings and discussion

The findings section is organized with the first part addressing the production side of the exhibition project with testimonies from the Space Invaders. The rest of the section addresses the reception side of the project with testimonies from visitors according to the themes of reflection and nostalgia emerging from the interviews.

### The Space Invaders: On heritage and creative nostalgia

For the Space Invaders the motivation for doing the project was the opportunity of having the platform of a real museum for displaying the objects of their fan adorations. As one puts it:

### Space Invader 1:

[…] it could be fun to try and make an exhibition in a so-called "real" museum about early computer games and early computer gaming cultures, 8-bit music, graphics and so on, because it is our point that this is our generation's common past. It is our generation's common cultural heritage. […]
(From group interview 1)

The museum's motivation for engaging in a co-creative project with the Space Invaders was to gain access to their expert knowledge and the assumption that they would be able to engage their peers – other young people. The expertise of fans is often of a different nature than that of the traditional academic expert. The academic expert strives for objectivity by distancing herself from the subject based on a critical and rational approach. The fan expert are often immersed in the subject matter and this proximity constitutes and affective and subjective approach (Jenkins 1992). The subjective perspective of the Space Invaders did not manifest itself in the content of the text labels they produced for the exhibition. Here they adopted an impersonal style rather than a personal account. They did disclose a personal taste, however, in the selection of contextual material, for example in the choice of films and music provided for the teenage room interior. This could be because these media forms do not fall within C64 culture, their field of expertise, and therefore they had to rely on personal experience. The Space Invaders obviously feel nostalgic towards the 1980s computer culture. More importantly, this nostalgia inspires them to make other creations such as music.

### Space Invader 2:

I have never really played computer games either and still do not do it, but I am enormously inspired by them to make something creative […] it should be in a "real" art museum precisely because we want to present it as art, and one of the ways we wanted to show this is how it have inspired other media such as graphics, music and others.
(From group interview 1)

Here the female Space Invader displays a reflective nostalgia towards computer culture not rooted in lived memories. She is of the 2. generation and appreciate retro-gaming as an aesthetic culture – an art form – in which she can find inspiration for her own creations. Her two male counterparts are also not part of contemporary gaming culture. They are of the 1. generation of gamers and while they find creative inspiration in C64 culture they are also more prone to simple nostalgia. For example regarding the DIY aspect of game development in 'the good old days'.

### The visitors: On simple and reflective nostalgia
Simple nostalgia was the immediate reaction of many 1. generation visitors when encountering the objects of retro gaming and vintage computing in the museum. Still, for some visitors, this encounter was contextualised by reflection on contemporary games and the development that has let us here.

### Visitor 3.A (1.G):
Well, so I have not played computer games myself, but I can remember them from back in the 80s, and of course I can see the difference between these games and the games they [her children] are playing, so the only knowledge I really have off it is Minecraft and what now interests them. Nevertheless, it is fun to see it again; it is a very nostalgic re-acquaintance you might say. I think it is a good idea to do it, because we are so used to games, and they [her children] talk of nothing but games. So, it was nice to be reminded of how it was. I think it is really exciting to see how much it has developed.
(From group interview 3)

The experience of using vintage gaming artefacts caused several of the interviewees to reflect on the developmental process of gaming technology. They reflected upon how rapid this process has been and how we take the immediateness of the interactions as a given today. Earlier on, we waited patiently while the game loaded. In addition, they reflected on the tactile aspect of the gaming interface, which has become much more responsive with tremors in the controllers, resulting from actions in the game, a feature not found in the vintage arcade machines. Often lived memories are posited as a precondition for the experience of nostalgia (Barrett et al. 2010; Davis 1979). However, several of our 2. generation interviewees reported experiencing nostalgia even if explicitly stating that the objects on display were from before their time. This shows that it is possible to feel nostalgic towards a past that you have not experienced and it might even be quite a common feeling.

### Visitor 5.B (2.G):
However, a little nostalgic that there are so many of the objects that are perhaps just the generation before us, but many of the things you have heard a lot about. That 'when I had a Commodore 64', right? Therefore, you have heard a lot about them, but never really seen… So, you have had an idea about, what it was and how it functioned, but it is fun to see, ok this, this was the bomb back then.
(From group interview 5)

This connects to the concepts of 'post-memory' (Hirsch 2008) and 'prosthetic memory' (Landsberg 2004), meaning that memories of a previous generation are adopted and thus can serve as objects of nostalgia. These forms of secondary memory are often mediated memories as they are enabled not by direct lived experience but

by the consumption of media products such as books and films (Dijck 2007: 21). The notion that gaming culture was of a more social nature before the Internet is a significant aspect of 2. generation simple nostalgia:

**Visitor 5.D (2.G):**
It was also a more social thing back then. As you are saying, today we just sit at home and… Yes, we can still compete and talk and such via the Internet, but back then it was also about something else. Thus, there was something. Damn, it has become a bit sad today compared to back then.
(From group interview 5)

**Visitor 2.D (2.G):**
Well, I just think it is very exciting to get back to that period, were the gaming enthusiasm just really boomed. That there were these crack intros where you just really had an insanely tight community around what this was really about. Then it is just great fun to get down and try some of these old games, that you have kind of grown up with at home. Of course not quite, but it is very nostalgic even though you had not really been there.
(From group interview 2)

Further, the properties of a social community around gaming in the past, which the 2. generation imagine, can be a nostalgic projection of what they find lacking in their own contemporary gaming culture. Even though the possibilities for interaction and communicating globally with others, who has a similar interest in gaming, have never been better, they still feel the lack of a face-to-face community around gaming.

### The visitors: On fan curators
Almost none of the interviewees noticed that the exhibition was the result of fan curators' effort. Thus, they did not comment on it. This might in part be a consequence of visitor expectations. Co-creative and similar exhibition projects with a high degree of external participation are still uncommon in museums and thus museum visitors expect the message of the exhibition to be in the authoritative voice of the institution. Further, as already mentioned, the narrative style on the exhibition labels was impersonal and therefore similar to regular museum labelling practice. The museum exhibition was a new and untried form of expression for the Space Invaders. They might therefore have mimicked the exhibition format based on their experiences with museums rather than try to create something radically different. They were adamant that many of the games should be playable, but the Media Museum had already done such an exhibition before. In defence of the creativity of the Space Invaders the series of events concomitant with the exhibition contained many original reinterpretations of C64 culture. Unfortunately, we did not conduct visitor studies at these events. Based on the attending audience, however, the Space Invaders succeeded in engaging the younger generations in early computer culture.

The only objection to the fan curators, made in the interviews, was on the selection of the artefacts as being too narrow in scope focusing only on games, thereby omitting the general history of computing. This objection was made by visitors of the 1. generation who have lived memories of the period and not being retro-gaming fans themselves perhaps feel that the period in general is thus misrepresented by a particular focus on gaming culture.

## Concluding remarks
Based on the overall favourable reception of both exhibitions on past gaming culture and the immediate nostalgic reactions of many visitors of both the 1. and 2. generations we can say that the museum exhibition is an

appropriate 'space for the revisit of time' (Boym 2007: 8). However, the inclusion of gaming culture in the museum should not merely be for re-enchanting the past, thereby satisfying the retro cultural sensibilities of some visitors. Rather the museum should be a place for reflection over past and present. There is a considerable potential for the affective engagement of visitors in retro gaming culture, which can serve as a platform of interest for the scaffolding of further reflection. Of the two participatory approaches under consideration here 1) inviting visitors to participate by playing the games and 2) co-creating the exhibition with fans, the first seems to have been the most effective in stimulating the visitors to reflect on gaming past and present thereby moving beyond simple nostalgia. The interactive and embodied experience of waiting for a game to load before playing it caused reflection on the development of technology and the immediate response of technology we take as a given today. There is a clear educational dividend for the visitors in this participation.

While both the 1. and the 2. generation of visitors reflected on issues of technological development, the 2. generation also displayed notions of past gaming culture formed more by simple nostalgia than reflection, most notable in the imagined sociality and community around the arcade hall. We expected simple nostalgia to be present primarily in the first generation with lived memories of the culture on display. Nevertheless, simple nostalgia is apparently also present in the 2. generation. In this regard, the transformative potential of the creative nostalgia evident in the music and performances of the Space Invaders did not manifest itself in the exhibition format in a way that triggered reflections or inspired creative actions at the visitors' side. Almost none of the interviewees noticed that the exhibition was the result of fan curators' effort. The museum exhibition was a new and untried form of expression for the Space Invaders. They might therefore have mimicked the exhibition format based on their experiences with museums rather than try to create something radically different. If the goal of co-creating with fans is to move beyond established practice a lesson we learned from this project was that rather than adopting a hands-off approach in the collaboration with the fans, as we did on this occasion, the museum curator should adopt a more active role. Not by imposing his/her own views on the creative process but by challenging the ideas of the fans thus pushing the outside of the envelope together.

Still, the exhibition would not have happened without the participation of the Space Invaders, as the curators of the Media Museum did not have the expert knowledge for curating such an exhibition. Despite including fans as participants in the production process with regard to the visitors, the power relation remained unequal as the role of expert(s) to laypeople as recipients or consumers. There is clearly room for improving the degree of equality in the power relations between the production and reception side of such exhibition projects along several of the dimensions of participation if the exhibition should be considered as participatory also for regular visitors and not just particular interest groups such as fans.

With regard to the development of gaming history and the understanding of past gaming culture in Denmark this study provided several avenues for further exploration. Especially the notion of the 2. generation that the gaming culture around the arcade halls of the 1980s was more social than the contemporary gaming culture can bear further investigation. Is it just an image gleaned from mediated memories in movies? Perhaps the portrayal of this arcade culture in American films never corresponded to the actual gaming culture in Denmark in the 1980s. An ethnographic research project collecting first-hand experiences from the generation who was there and grew up with arcade machines as the latest new media technology in Denmark could corroborate or correct the picture depicted by popular media by supplying the nuances applying to the Danish condition.

The main implication for the practice of exhibition design from this study is the value of adopting a constructive attitude towards the nostalgia of visitors rather than dismissing it altogether as a form of false consciousness. Nostalgia is a form of affective engagement in the exhibition subject matter that can be leveraged to create reflection. We still need more tailored exhibition experiments and accompanying studies of visitor

meaning-making, however, in order to understand how better to make the transformation from simple to reflective nostalgia.

## Bionotes

Christian Hviid Mortensen holds a PhD from the University of Southern Denmark. His thesis *Displaying Sound. Radio as Media Heritage in a Museological Context* (2014) addressed how we can conceive of and display radio sound as museum artefacts and what kind of visitor meaning-making such listening exhibitions can enable. Christian has been a curator at the Media Museum in Odense since 2007.

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