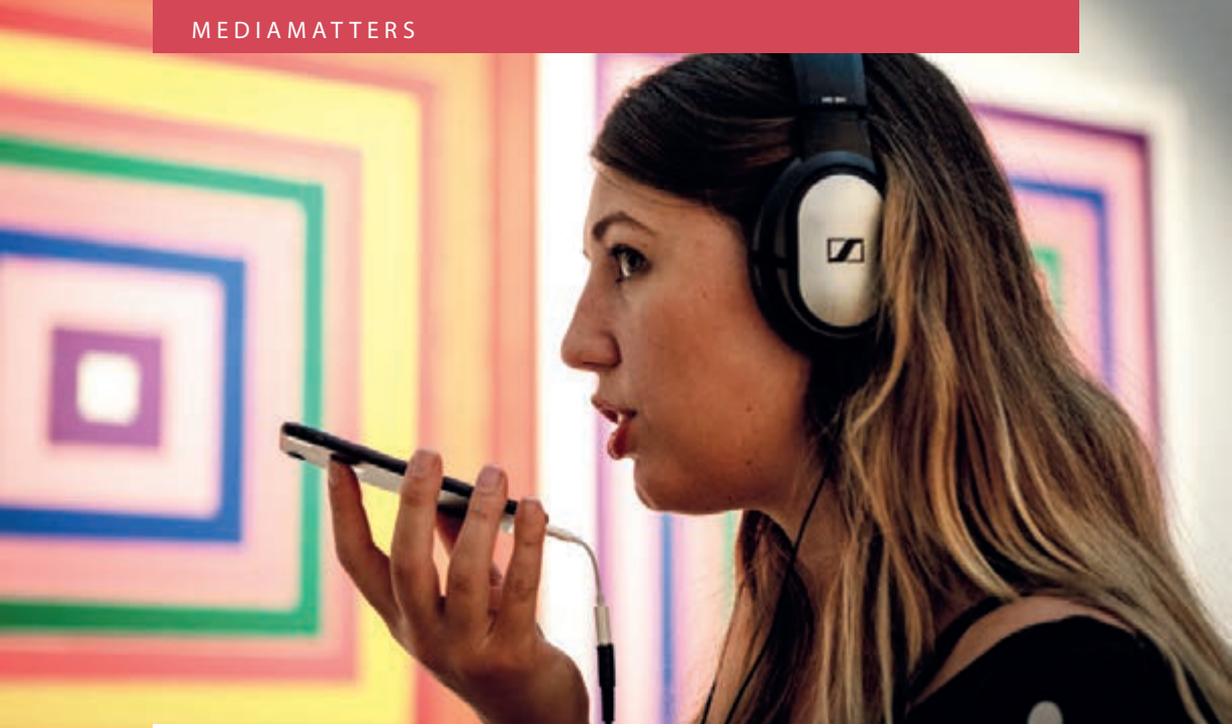


MEDIAMATTERS



Edited by Annika Waern and Anders Sundnes Løvlie

# Hybrid Museum Experiences

Theory and Design

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# Hybrid Museum Experiences



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# Hybrid Museum Experiences

*Theory and Design*

*Edited by  
Annika Waern and  
Anders Sundnes Løvlie*

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# Preface

*Kevin Bacon and Nikita Mathias*

The digitization of museum collections has led to millions of digital representations of objects to be experienced, shared and discussed by online visitors. In most cases, these digital copies live a life of their own, disconnected from the real objects they represent. ‘Hybrid museum experiences’ seek to bring together the original object and digital technology to facilitate visitor experiences that are meaningful, personal and inclusive. Combining the emotional and intellectual force of objects in museum spaces with the participatory, narrative and immersive potential of digital, hybrid experiences aim at reconfiguring the relationship between the visitor, the exhibit and the museum that surrounds them.

This book is an ideal reading for anyone interested in museums who is open to an ambitious yet deeper and more nuanced approach to digital technology. Although it is mostly written by academic researchers, it has been informed by work with a variety of museum practitioners, including the authors of this preface.

We met as part of the action research strand of the GIFT project, which brought together museum professionals from five different countries. Although we represented a variety of museums differing greatly in scope and size, we recognized several shared challenges. How do we get more of our colleagues working with digital technologies? How do we create genuinely audience-focused experiences? How do we embed experimental practice into our organizations?

These are thorny questions which resist simple solutions and require a good deal of honesty and self-awareness to try and answer. The workshops supported by GIFT created a safe space for reflection, discussion and using design thinking tools to work collectively toward common goals. Moreover, by establishing a dialogue between different museum sectors, country borders and various disciplines (design, academia, cultural heritage, visual arts, computer science) it equipped those discussions with a rich conceptual vocabulary that helped all the participants to rethink what a museum can mean to its visitors.

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In addition to the action research workshops described in Chapter 6 both MUNCH and Royal Pavilion & Museums supported the prototyping of some of the larger projects featured in this book. The *Gift* app (see Chapter 3) developed by GIFT partner Blast Theory was iteratively tested in Brighton Museum over three years before becoming part of the visitor experience there, and at MUNCH in 2019. MUNCH also collaborated with GIFT partner NextGame on its *Sensitive Pictures* prototype and Brighton Museum contributed to an app developed within GIFT, the *One Minute* app, from content creation to in-gallery deployment.

Some of these projects are described in more detail in the book, and even more are represented at the accompanying website. It is worth noting that our museums were far from passive in the development and testing processes and had an active role in shaping the experiences. In the case of the *Gift* app we used this project to try to solve subtly different problems for our respective museums. For Royal Pavilion & Museums it was an opportunity to experiment with a way of bringing coherence to the eclectic collections displayed in Brighton Museum, by enabling our visitors to create and share personal interpretations. Our role in working with Blast Theory was primarily to help define the affordances of the museum by making the artists aware of where barriers to uptake may exist. Often those barriers were physical, such as the counter-intuitive layout of the galleries, but they were also human: How do you motivate front of house staff to understand and promote a new digital experience? The openly collaborative approach practised by Blast Theory stood in marked contrast to the solutionism sometimes practised by commercial technologists, where a product is designed around a narrow problem ('how to enable visitors to learn more about the artworks?') without adequately considering local factors such as the admission process and the existing behaviour patterns of visitors.

At MUNCH, Blast Theory's *Gift* app had to function in an entirely different environment. In contrast to the diverse collection of Royal Pavilions & Museums, we explored the possibilities of the app within the context of a temporary exhibition dedicated to the art of Edvard Munch and a few other artists represented in our collection. But the exhibition was also about gifting. Since our collection is overwhelmingly based on donations by Edvard Munch and others, we wanted to explore what it means to receive, give and care for a gift. The *Gift* app gave our visitors a tangible and personal gifting experience and, hopefully, made them think about gifting as a social practice. However, we also learnt that gifting is a complicated and fragile matter. What is better? To receive or to give a gift? Our test runs showed that using the *Gift* app to create a gift for someone is more rewarding than



receiving a gift from the museum. Yet, for the visitor, who does not know how rewarding the experience can be, the prospect of making and sending a gift may not be reason enough to give the app a try. This was a valuable lesson when experimenting with different types of materials and call-to-actions for introducing visitors to the experience. The visitors' motivations to use or not use the *Gift* app were more complex than we anticipated, especially when catering to different target groups such as primary school pupils, tourists, or young adults from Oslo.

Both of our museums have learned a great deal from the GIFT project, above and beyond the component parts we were involved in. We have seen the productivity of iterative processes and scalable prototyping; how museums can collaborate with small and agile creative companies through facilitating detailed user testing; and the power of good and accessible storytelling allied with short feedback loops. Even some of the relative failings of these projects have proven valuable: Wrestling with the challenges of introducing visitors to these digital experiences has helped shape the 'bring your own device' tactics now used by Royal Pavilion & Museums. As for the application of Sensitive Pictures at MUNCH, several shortcomings in the attempt to address the visitor in a personal yet non-intrusive way eventually led to hybrid experiences that established meaningful and emotional connections with Edvard Munch's art. This was achieved through a series of prototypes and a *minimum viable product* approach, starting off with a theatre workshop and plain prototypes, which were experienced as being too intrusive, too intense and too serious by many users. Based on these relative failures, we were able to design an experience that struck the right balance between intimacy and playfulness.

We certainly see the opportunities for hybrid experiences in museums: The potential for inclusion and interactivity; to allow for freedom of art experience in otherwise restricted physical museum spaces; to open up heritage spaces for personal and storytelling-based experiences. Yet our participation also made us realise the importance of user-centeredness, iteration and testing, service design thinking, not only for hybrid experiences but for all the kinds of experiences, products and services a museum provides.

It is also worth noting that this book is published at a time when museums need to become much smarter in how they use digital. The increased expectations of funders for museums to use more digital technology has coincided with a period of austerity in many countries following the financial crash of 2008. This has often resulted in funding becoming focused on one-off flagship projects, short-term R&D initiatives with no support to



scale up to full deployment, and an over-reliance on proprietary social media platforms that offer ephemeral engagement at best. The findings of this book strongly indicate that such short-term thinking and its correlating funding schemes are bound to fail if not backed up by nurturing the establishment of agile and human-centred production processes as an essential in-house component of museums.

Witnessing the rise of the *experience society* and *economy*, museums are further pressured to compete with a multitude of experiential offers such as escape rooms, multiplex cinemas, streaming platforms, VR arcades, immersive theatre performances and digital playgrounds, to name but a few. What these offers strikingly demonstrate is that only those who know and cater to the needs and challenges of their users succeed. Museums can simply not afford to ignore their visitors anymore, especially when it comes to costly digital products. This aspect of human-centeredness must eventually transform every element of the museum visit, thereby also slowly eroding well-established notions and conventions that dictate what to expect and how to behave inside a museum. The app-based hybrid experience *Never let me go*, which resulted from the GIFT project (see Chapter 4), empowers the visitor to playfully explore and challenge the boundaries of museum conventions. Digital assets as such can become powerful tools to make museums more inclusive and relevant for broader parts of society.

At the time of writing (November 2020), many museums have been forced to close their doors during the Covid-19 pandemic and the subsequent economic shock is likely to place further financial strain on the sector over the next decade.

Museums need to become much more agile and efficient in how they use digital technology, demonstrating genuine impact as a return on investment. By introducing a set of open source tools and, more importantly, introducing fresh and radical ways of rethinking the museum experience, this book is both timely and essential for the sector.

## About the Authors

**Kevin Bacon** is Digital Manager at the Royal Pavilion & Museums Trust, a charity managing five museums in the city of Brighton & Hove. With previous experience working in both front of house roles and as a curator of its photographic collections, he became the service's first digital lead in 2011. He holds Master's degrees in political philosophy and digital media and is a Visiting Researcher at the University of Brighton.



**Nikita Mathias** is a senior concept developer at MUNCH, where he creates digital and analogue visitor experiences, does research and works on publications. His background lies in art history, media studies and aesthetics, and he holds a PhD from the University of Tübingen, Germany, on the topic of the visual history of natural disasters. In addition, he spent years working as a journalist and at various cultural institutions. Born and raised in Germany, he has been living in Oslo for several years.





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# Concepts



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# 1. Introduction

*Anders Sundnes Løvlie and Annika Waern*

## Abstract

Introduces the concept of hybrid museum experiences, why it is timely, and presents the major theme of the book: How to make museum experiences more personally and socially meaningful through the use of technology.

**Keywords:** Hybrid Museum Experiences; Personalisation; Interpersonalisation; Museum Technology

You are walking the corridors of the National Museum in Belgrade. Strolling through majestic exhibition halls you view the collections of historic artefacts and artworks. On the side of a painting depicting a ferocious medieval battle scene ('Study for the painting *Furor Teutonicus*', by Paja Jovanović) you notice a label written with a peculiar font, saying: '#war'. You scan the label with your phone, and suddenly the phone's camera screen projects a virtual object in front of you, coming from a much more recent era: A red triangular warning sign that reads 'MINES'. Below it, a text appears:

*Serbian Sarajevo, winter of 1995, Dayton agreement just signed. I'm twenty-two years old and filming a documentary film. The surrounding streets all barricaded, everything is ruined, abandoned, the buildings are riddled with shrapnel. The street before me is empty, without a living creature in sight. I spot a single rope across it with a red sign hanging that reads 'mines'. I walk up to it and take it down, without fear and without logic I decide to keep it as a souvenir. I keep the MINES sign as an anti-war protest sign, in preparation, because there will be more of them to come.*

This is a part of *Your Stories*, the result of a collaborative project between the National Museum in Belgrade and the Serbian design agency NextGame, in which citizens were invited to virtually 'donate' mundane objects of great

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personal importance to them. The objects were scanned using photogrammetry, and were exhibited as virtual 3D models along with a short text explaining the significance of the object to the person who donated it. The collection of virtual objects and the way they were associated with physical museum objects set up a parallel digital exhibition – a ‘people’s museum’ accessible within the physical space of the museum and aligned with the permanent exhibition.

The *Your Stories* project is an example of what we in this book call hybrid experiences: Designs that use new technologies to augment, expand or alter the physical experience of visiting the museum. We will discuss several other examples throughout the book. One will be a phone app that allows visitors to record their personal reflections on a museum collection and send them as a gift to somebody, who in their turn can experience the gift on site in the museum, as a personal guide. Another example that will be discussed in detail is a game in which one museum visitor controls the movements of another visitor as an ‘avatar’, to create a playfully personalized experience of the museum.

What do these examples have in common? First, all use technology – often smartphone-based – with the aim of adding a digital dimension to the museum visit. The use of digital technology in the museum sector has often been viewed as an alternative to the physical museum – sometimes manifested in the idea of the ‘virtual museum’, and at the time of writing reflected in the proliferation of online interfaces to cultural heritage, museum APIs<sup>1</sup> and the Open GLAM<sup>2</sup> movement<sup>3</sup>. Hybrid museum experiences break from this trend, in that they are closely integrated within a physical museum visit. Even those that are smartphone and internet based (and thus could in principle be accessed anywhere, anytime) are designed to be experienced in the context of a physical museum exhibition. As such they place themselves in a middle position (a hybrid) between the ‘traditional physical museum experience’, and a purely virtual experience. Furthermore, unlike many other uses of technology inside museums, hybrid museum experiences are not digital experiences designed to be experienced in isolation – such as a stationary information screen or kiosk – but rather in close relation to the physical space and exhibit. In the example above, this ambition can be seen in the way the digital content has been carefully chosen to relate to the physical exhibits it is attached to.

1 Application Programming Interface. See for instance <https://pro.europeana.eu/page/apis>.

2 <https://openglam.org>

3 Schweibenz, ‘The Virtual Museum: An Overview of its Origins, Concepts, and Terminology’.



The design aim for hybrid museum experiences, of integrating digital technology closely with the museum space and the museum visit, means that hybrid museum visits need to strike other difficult balances – they need to be hybrid in more than one respect. In particular, hybrid museum experiences need to take into account how museum visits are performed. Museum technology falls on a scale between presenting content to single users – such as the ubiquitous audio/multimedia guide applications – towards broadcasting (or ‘sharing’) museum content to broad audiences through social media, serving the museum’s purposes of marketing. However, both of these extremes are problematic: On the one hand, museum visits are usually social activities where visitors are interested in doing something together, which means that experiences that can only be used by single visitors will fail to accommodate the visitors’ needs and interests. On the other hand, sharing content through social media may reach a broad audience, but also risks becoming incorporated into social media logics leading to mostly shallow interactions such as ‘likes’ and brief comments. There is great potential for creating hybrid museum experiences that explore the space in between these extremes, taking into account how museum visits are *interpersonal*, shared with close friends or in groups where the museum visit serves a function of strengthening social ties. Hybrid museum experiences should be designed to be shared – not with a large audience on social media, but rather with one or a few people that are ‘special’: Family, friends and loved ones. This is another way in which these experiences are hybrid: They are social, while still highly personal. In *Your Stories* the interpersonal dimension is explored through the personal objects and stories which have been donated by people who themselves are visitors of the museum, and which now can be shared with other visitors. As we will further elaborate in Chapter 5, the curator’s aim was also to create a more intimate connection with the historical artefacts on display, through their association with the more current, and sometimes mundane, stories told by donors.

Finally, hybrid experiences need to strike a balance in integrating both the museum and the visitor perspectives. Hybrid museum experiences are designed to foreground visitor perspectives, they open up for active exploration of museums and they will very often integrate contributions from visitors (such as in the *Your Stories* example). However, they need to do so without losing track of the importance of curatorship and the way museums create meaning. Thus, they become hybrid in the sense that they explore the design space between two concepts often applied to digital media: Participation and curation. In *Your Stories*, we see this balance in how the call for objects and stories was open to any and all visitors, while the

selection of what objects to include in the exhibition and which exhibits to associate them with, was a deliberative process in the hands of the curators.

To sum up, the experiences we discuss in this book are hybrid in relation to multiple dimensions of the museum experience:

- The physical and the digital
- The personal and the social
- The museum and the visitor

This means that while technology is used to make these experiences possible, technology is not at the centre. Our examples mostly use market-ready technologies. Instead, it is the human *experience* and the meaning-making processes that are ongoing during the museum visit that are at the centre.

We – the authors of this book – are researchers and designers working in the fields of experience design, human-computer interaction, play and media studies. We believe that hybrid museum experiences may be used to offer engaging experiences to visitors, to allow the museum to reach out to new audiences, and even challenge the boundary between audience and participants in a collective reimagining of what museums can and should be.

## Why hybrid museum experiences?

Museums are changing. Once, museums were seen primarily as repositories housing valuable and venerable artefacts; today they are increasingly seen as places of experience and dialogue, they are multi-voiced, story-oriented, open for provocation and reflection. Over recent years, museum institutions have increasingly shifted their focus from highlighting physical collections to highlighting stories and experiences they can share with their audiences.<sup>4</sup>

In this book, we focus on how technology can better involve the museum audience, so that visitors and their preconceptions and experiences become part of defining what museum artefacts can mean to them and their group. Museum visitors *will* create their own meaning of an exhibit (and sometimes share it), even though the museum and curators control what is displayed and how. A main challenge for museums is: How can they support visitors in their meaning-making process, letting them be active participants in their visit? Hybrid museum experiences can be both challenging and open

4 Hooper-Greenhill, 'Changing Values in the Art Museum'; Hooper-Greenhill, *Museums and the Interpretation of Visual Culture*; Simon, *The Participatory Museum*.

for appropriation, and thereby allow for a rich variety of personal meaning-making processes.

The technologies needed to create hybrid experiences have existed for some time, and have dominated much work with digital museum experiences in recent years. At the time of writing this book, in particular Augmented Reality (AR) and Virtual Reality (VR) have been in vogue for some years, driven by commercial products like the AR-based games *Pokémon GO* and *The Walking Dead: Our World*, as well as the increasing availability of consumer-targeted VR headsets like Oculus Rift and HTC Vive. Of particular relevance for this book is the concept of Mixed Reality, which has been described as a subset of Virtual Reality and contains a continuum of ways to combine real and virtual input.<sup>5</sup> Mixed Reality has been used for artistic and entertainment purposes for a long time, and many of the authors of this book have been central in that development through numerous research projects throughout the last decades.<sup>6</sup>

However, the term ‘hybrid’ is in some sense deliberately vague. It indicates a mix of other elements – in this case, some elements of digital technology combined with some elements of ‘analogue’ physical exhibits – but doesn’t clearly specify which technologies are used, or in what kind of physical setup. To some extent, the perspective we are offering is technology-agnostic: We give primacy to designing *experiences*, and employ the technologies that are available to deliver these experiences. However, through the chapters of this book we will present some particular tools and solutions that we find particularly promising to explore in a museum context.

## Experience design

What does it mean to focus on experiences rather than technology – and why is that a good idea? After all, digital museum experiences do rely on technology. However, it might be useful to contemplate more precisely what we mean when we talk about technology. Are we talking about hardware devices such as smartphones, interactive displays, virtual reality headsets? Or are we more interested in the software – such as apps, games, or chatbots? Or is there some other dimension we should be looking at?

The media scholar Gunnar Liestøl has suggested that the development of digital media takes place not just on the levels of hardware and software,

5 Milgram and Kishino, ‘A Taxonomy of Mixed Reality Visual Displays’.

6 Benford and Giannachi, *Performing Mixed Reality*; Montola, Stenros, and Waern, *Pervasive Games: Theory and Design*.

but also on a third level he calls ‘meaningware’.<sup>7</sup> This concept refers to genres of communication, as they are reimagined and reshaped using the new technologies. Liestøl’s central observation is that the development seems to go at different speeds in the different levels: While hardware develops at an astonishing rate and new software often also seems to develop bewilderingly fast, innovations in digital genres – the new aesthetics and modes of meaningful engagement enabled by digital technology – tend to be slower and further apart. The state of digital technology in museums seems to support this view. At the level of hardware and software, museums have for a long time embraced digital technology and have spent considerable resources digitizing collections and building digital infrastructures. However, innovation in the design of visitor experiences that use digital technology lags behind.

We can see this for example in how the museum sector has adapted to smartphones. Museums have started to take into account the most straightforward technical capabilities of smartphones, e.g. through offering museum guides as downloadable apps. But it has been harder for museums to adapt to the way in which visitors also arrive with their smartphone habits, conventions and expectations. While some museums have begun to invite visitors to take photos and share museum content through social media (e.g. through Instagram competitions), the very act of photographing within the museum remains problematic both for preservation and legal reasons. At the time of writing, museums have started to instead use app technology to develop personalizable and versatile museum guides, and mobile apps such as Smartify, Vizgu or Magnus use image recognition to this purpose.

Digital technology can offer so much more. Museums have so far only begun to explore the vast potential for meaningful experiences enabled by digital technologies including the smartphone. Typical examples of hybrid technologies that now are entering the museum sector include augmented and virtual reality, tangible interactions, and various targeted devices – even chatbots such as *Send Me SFMOMA*.<sup>8</sup> These formats offer the potential for experiences that are very different from ordinary museum experiences, including pervasive games, alternative narratives, and deeply personal immersive experiences.

Digital technology also brings additional complexity to the museum context, and adds new responsibilities. Museums face a bewildering range

7 Liestøl, ‘PowerPoint: Beyond Hardware and Software’.

8 Chan and Cope, ‘Strategies against Architecture’; Mollica, ‘Send Me SFMOMA’.

of technologies, each with its own benefits but also posing new demands on museum personnel when it comes to making creative use of these, commissioning new forms of experiences, and maintaining the results. The pitfalls are many: Technologies may fail, they may require too much in resources or upkeep, the completed designs may not do quite what was initially promised, designs may fail to meet the complex and sometimes conflicting demands of curators, marketers, educators and IT departments – or they may simply fail to engage visitors.

Developing technologically mediated visitor experiences is a ‘wicked problem’<sup>9</sup> of the kind that designers specialize in solving, by gathering contributions from multiple stakeholders and prioritising human experience over technological paradigms. However, far too often this problem is approached by putting technology first, and engineering systems and apps that often do not end up meeting the actual needs of museums or visitors. In this book, we explore the opportunities and challenges brought about by new museology and technology through the lens of hybridity. This lens allows us to acknowledge that solutions do not lie solely with the technology, but in the careful crafting of the meeting between technology, the physical museum, museum professionals and visitors.

## GIFT

The theory, cases, methods and tools presented in this book were all developed within the EU-funded research project GIFT: A large and cross-disciplinary research project involving artists, designers, curators, museum educators, computer scientists and a high number of museums in Europe and the US. All of the authors of this book were participants in the project. The book also draws on a wide range of research and examples based on the authors’ decades of collective experience as designers and researchers in this area.

When the GIFT project was originally devised, in the winter of 2015–2016, much of the museum world was in the throes of an ongoing VR hype. At the time, it seemed like every other research project involving museums and technology were dedicated to re-creating a museum experience inside the virtual world of a VR headset. But as already discussed, visits are seldom isolated: Most people come with someone else, whether this is their significant other, a whole family, a group of friends, or a class of school children.

9 Buchanan, ‘Wicked problems in design thinking’.



The VR trend created problems from this perspective: When you put on a VR headset you are cut off from the people around you and immersed in a purely virtual world (while outside, your friends are impatiently waiting for their turn, making fun of the strange gestures you are doing, oblivious to your surroundings). We decided to instead shift our perspective towards human practices and experiences that in everyday life rely on and reinforce the social ties within groups. The social practices that we selected to explore were *gifting* and *play*, perspectives that will be detailed further in Chapters 2, 3 and 4.

In the GIFT project, we have collaborated with organizations such as Culture24 and Europeana, that have worked extensively over a long time to understand what it takes to build the digital capacity of a museum. Furthermore, we have worked with a large number of museums in Europe and the US to explore challenges and possible improvements to the way they work with digital and hybrid experiences. These include:

- San Francisco Museum of Modern Art, USA
- TATE Modern, UK
- The Munch Museum, Norway
- ARKEN Museum of Modern Art, Denmark
- The National Gallery of Denmark
- Royal Albert Memorial Museum & Art Gallery, UK
- Brighton Museum & Art Gallery, UK
- CAOS Centro Arti Opificio Siri, Italy
- Center for Studies of Holocaust and Religious Minorities, Norway
- The National Museum in Belgrade, Serbia
- The National Videogame Arcade, UK
- Danish Museum of Science & Technology, Denmark
- Derby Silk Mill, UK
- Tyne & Wear Archives & Museums, UK
- The Museum of Yugoslavia, Serbia
- University of Nottingham Museum of Archaeology, UK
- The National Museum of Photography, Denmark
- The Danish Architecture Center, Denmark

Working with these museums has provided us with important insights into the everyday difficulties faced by museum professionals, in trying to integrate technologically mediated experiences with their collections. It has also provided a testing ground and reality-check for methods, tools and concrete designs coming out of the project. Throughout the project and through the collective sharing of experiences, the group of museums

developed ways of working that can be replicated in other museums. In later chapters in this book we share some tools and recommendations, that can be used by museum professionals and others working with museum organizations in order to improve their efforts with hybrid experiences.

## The structure of this book

This book is divided into four main sections called concepts, cases, craft, and coda. The concepts section aims to give an overview of the main themes of the book and build a theoretical framing for both the concept of hybrid museum experiences, and the design approach advocated throughout the book. In the following chapter, the concept of Hybrid Museum Experiences is discussed in further depth, and related to previous research in this area.

The second section presents three case studies of designs that were created as part of the GIFT project, and tried out in six different museums in the UK, Denmark, Norway and Serbia. Chapter 3, called 'The *Gift App* – Gifting Museum Experiences' presents the design and deployment of a web app that invites museum visitors to turn their visit into a hybrid experience that can be digitally 'wrapped' as a gift and sent to someone they love – as if they were making a mixtape, only with objects from a museum. The chapter explores how gifting practices can be brought into museum visits through a hybrid museum experience, to make them more personally and interpersonally meaningful.

Chapter 4, called '*Never let me go*: Social and Introspective Play', presents a case study that directly addresses the way in which museum visits are rarely solitary experiences as visitors come in pairs or in groups, and their main reason to visit is typically to spend time with the people they come with. Museums tend to put great emphasis on the objects they have on display, and while they do want visitors to have an enjoyable (and possibly also social) experience, they also want to direct the visitors' attention towards the exhibition. The chapter explores this dilemma through the design of a playful museum experience called *Never let me go*, which aims to facilitate an experience that is at one and the same time social, while also directing the participants towards an introspective encounter with the museum collection.

The final case study Chapter 5, called '*Your Stories*: The Lifecycle of a Museum Experience', is a more in-depth account of the *Your Stories* case presented in the vignette at the start of this chapter. It looks into the potential for participatory curatorship and how the roles of the audience, the museum

and the technology developer were balanced in creating the experience. It also deals with another challenge for hybrid museum experiences: How can the museum ensure that a hybrid experience works well for the people it is intended for – and how can they make sure that it continues to work well, throughout the time that the system is in place? Through a study of this augmented reality installation in the National Museum in Belgrade, the chapter discusses the many practical and organizational challenges involved in developing and maintaining hybrid museum experiences.

In the craft section, we present a number of tools and methods for working with hybrid museum experiences. The first two of these chapters deal with the initiation of the design process. In Chapter 6, we discuss how museums can use action research as a method for ‘reflective practice’, which is a central concept in design research. We argue that developing a culture of internal reflective practice is vital for dealing with and getting the most out of the digital opportunities and challenges that museums are facing. Action research may be one productive way of fostering such a culture. The methods presented in the two following chapters are particularly well suited for use within the context of action research processes, even if they also can be used on their own.

Chapter 7 is called ‘Sensitizing to Theory’ and addresses a well-known problem in design research: How can relevant insights from academic theory help to inform practical design processes? The chapter presents two methods for doing this: Through introducing a theoretician as a dedicated role in a designer team, and through role-playing scenarios that can help designers and museum professionals to get a shared, embodied understanding of theories and concepts that are crucial for their joint design process, and that can help further their discussions during the same.

Chapter 8, ‘Ideation Tools for Experience Design’, presents insights from the practical experiments conducted as part of the action research project in GIFT. As part of this process a number of tools were developed and tested, to support the process of developing ideas, from the very early brainstorming phase and onwards to a critical examination of ideas, and early involvement of different stakeholders in the organization.

Chapter 9, ‘Data Driven Visitor Experiences’, discusses how data collected through digital tools can be used to develop a deeper understanding of visitor behaviour and needs, both during design and when a hybrid experience is in place in the museum. It is however not easy to make sense of data, even when one has access to it: This chapter delves into a variety of forms of data collection and visualization that present useful insights into visitor behaviour and experiences.



Chapter 10, 'Evaluating Hybrid Experiences', is a chapter about how hybrid museum experiences can be studied and evaluated. Hybrid museum experiences are put in place for a range of reasons, and evaluations help illuminating if, and how, the goals of a particular design were met. While evaluations sometimes only tell 'what was already known', they help put hard facts and figures to such imprecise impressions. And sometimes, they surprise us, uncovering effects and issues that were completely unknown.

In the final section called 'coda', the concluding chapter of the book returns to the critical aspects of hybridity, to discuss the opportunities and risks related to the design and employment of hybrid museum experiences. We highlight how the introduction of a hybrid museum experience, especially when it is one that is designed to shape the entire museum visit, challenges and sometimes redefines the essence of museums: What a museum *is*, and what the museum visit is about. The chapter discusses how the introduction of technology may remediate, reframe, or sometimes entirely restage the museum experience and how this can be seen as at the same time a challenge to the museum's identity, and an opportunity for museums to reinvent themselves.

The book forms a part of the resources that have come out of the GIFT project. More resources have been made available through the website <https://gifting.digital>. On the website, you can find the tools we are presenting in the book and more, including all the documentation that is needed to use the tools, the source code of software tools, case studies from practical experiments, scholarly publications, and other materials that might be useful for museum professionals and designers who wish to put these tools to use in practice. All of the tools offered on the website are open source and can be used freely and adapted to your own needs (even if you wish to use them for commercial purposes). Efforts have been made to make tools useful even for museums with few resources and limited technical capacity.

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## About the Authors

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