ROUTLEDGE INTERNATIONAL HANDBOOKS

The Routledge Handbook of Museums, Media and Communication

Edited by Kirsten Drotner, Vince Dziekan, Ross Parry and Kim Christian Schrøder

The Routledge Handbook of Museums, Media and Communication

Museums today find themselves within a mediatised society, where everyday life is conducted in a data-full and technology-rich context. In fact, museums are themselves mediatised: they present a uniquely media-centred environment, in which communicative media is a constitutive property of their organisation and of the visitor experience. *The Routledge Handbook of Museums, Media and Communication* explores what it means to take mediated communication as a key concept for museum studies and as a sensitising lens for media-related museum practice on the ground.

Including contributions from experts around the world, this original and innovative Handbook shares a nuanced and precise understanding of media, media concepts and media terminology, rehearsing new locations for writing on museum media and giving voice to new subject alignments. As a whole, the volume breaks new ground by reframing mediated museum communication as a resource for an inclusive understanding of current museum developments.

The Routledge Handbook of Museums, Media and Communication will appeal to students and scholars, as well as to practitioners involved in the visioning, design and delivery of mediated communication in the museum. It teaches us not just how to study museums, but how to go about being a museum in today's world.

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This Handbook is the result of an interdisciplinary journey and interlaced dialogues developed since 2014, when we first realised the scholarly need and the social enjoyment of cross-fertilising media studies and museum studies in the hope of advancing both. Museums and universities in Denmark and the United Kingdom have generously hosted editorial meetings where ideas were explored, and where key issues were discussed, developed and sometimes disbanded.

The result could not have materialised without the enthusiasm, commitment and hard work of the 25 authors whose chapters make up the Handbook. Their range of scholarly expertise, geographical reach and generational outlook mark the importance of intersecting academic collaboration when identifying the entangled relations between museums and mediated modes of communication. We are also most grateful to constructive input and ideas exchanged with colleagues and research networks at home and abroad, all helping to refine our framework for the Handbook, including DREAM (Danish Research Centre on Education and Advanced Media Materials), Our Museum, The Australia Council for the Arts, the V&A Research Institute (VARI) and Museums and the Web. We thank the Routledge editorial and production teams for their professionalism and dedication; and we are indebted to Anne Høgedal, who played a key role in ensuring the smooth progression of the project, and to Maria Davidsen, who was invaluable in preparing the manuscript for print. Last, but not least, we thank our partners for their support and generosity throughout the preparation and writing of this volume.

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Media, mediatisation and museums

A new ensemble

Kirsten Drotner, Vince Dziekan, Ross Parry and Kim Christian Schrøder

Museums have always communicated with the world around them through various means, such as signage, leaflets, photos and materials for learning. Over the years, museum communication has been marked by the uptake of media technologies that were new at the time, such as film and audio guides. In recent years, the options of mediated communication have been catalysed by a range of media technologies that are born digital (computers, mobiles) or can be turned into digital formats (e.g. print, film, photos). The Internet has widened these options through rapid and nearly global reach, thus turning museums' mediated communication into both a physical and a virtual affair. Museums are in many ways unique spaces because they can bring the whole media ensemble into a particular place and space that exists within a set of complex mediated communication environments.

A prime motivation for this Handbook is to explore what it means to take the concept of mediated communication as a key concept for museum studies and as a sensitising lens for media-related museum practice on the ground. The title of the Handbook is indicative of its scale and scope. Its ambition is to break new ground by reframing mediated museum communication as a resource for an inclusive understanding of current museum developments. The volume takes as its starting point that museums around the world are in a process of deep transformation because they are permeated by technologically mediated forms of communication. So, rather than asking disconnected questions about museums' digital infrastructure or technology uses, or about visitor engagements through the application of apps or online marketing strategies, we instead address the complex mediated communication environments within which museums are embedded, contextualising specific research questions within a broad account of museums' changing interactions with their surroundings. To take a simple example: rather than asking about the impact of gaming on museum visitor engagements, we ask when and why gaming makes connections between museums and gamers, and amongst gamers themselves, and how these communication processes are shaped by institutional and everyday contexts of use.

What is a medium?

This focus on museums' technologically mediated communication environments is at once more modest and grander than what is often found in museum studies. It is more modest because we define *media* as particular communication technologies whose properties enable the production, storage, reproduction and sharing of signs – text, images and sound – across space and time. Signs are meaning-making tools, as is evident if we think about language; and so, mediated communication technologies allow the expression and exchange of meaning beyond the here-and-now, and beyond the co-presence of actors. Perhaps the most obvious example is print media such as the book, which allows meaning in the form of text and images to be produced and reproduced in large numbers, to be stored for posterity and exchanged across large distances. This definition of media follows media scholar James Carey's assertion that media at one and the same time hold both material and symbolic properties (Carey, 1989/1992). Media, in other words, are material artefacts, often of a commercial nature, circulating in society, but they are also symbolic tools generating meaning, representation and rituals.

Our definition of media differs from more encompassing understandings of media often found in museum studies. These are understandings that have tended to conflate media and communication in museums. For instance, in her pioneering overview of museums and communication, Eilean Hooper-Greenhill critically describes how a transmission communication model permeates museums' interactions: "It is possible to describe the exhibition team as the source, the exhibition as the transmitter, with objects, texts and events as the channel of communication, the visitors' heads as the receivers, with the visitors' understanding as the final destination" (Hooper-Greenhill, 1999, p. 31). No distinction is made here between media ("texts") and other modes of communication that are transient and interpersonal ("events") or localised ("objects"). Our definition of media also differs from conceptions that collapse the concept of media and the concept of museum. For example, Angelina Russo asserts that "the contemporary museum is a media space" (Russo, 2012, p. 145). Such a definition makes it difficult to analyse, understand and design for communicative distinctions between, for example, display techniques, guided tours and social network sites. Finally, our definition of media differs from, especially more recent, approaches to museum communication that focus on aspects of technology rather than on aspects of communication (L. MacDonald, 2006; Tallon & Walker, 2008; Ch'ng, Gaffney, & Chapman, 2013). Such approaches often critically examine information systems and infrastructures and their importance for framing discourses on "newness" with implications for museums' internal processes of communication, including data management and modes of curation. Less attention is paid to external modes of communication, including mediated modes of communication, or these modes are only inferred from the technological properties.

The modest definition of media, on which this Handbook is based, allows us to separate out developments and discourses of museums that are, indeed, related to wider developments in communication and to developments in communication technologies, but may not have these developments as their cause. Discourses on participation, for example, in many parts of the world predate the pervasive uptake of digital media. These discourses may be accelerated by digital media but have wider resonance in contestations over welfarist vs. neo-liberal social models. Likewise, the current datafication of many museum practices – from archival interoperability to online audience traces – prompts important reflections on shifting relations between proprietary platforms, museums' institutional and legal authority and the limits of engagement. Such reflections imply nuanced analyses of the nested nature of communication, mediation and technological digitisation that, in their turn, must start from precise definitions of these terms.

We hope that our more modest definition of media may allow an accurate mapping of the relations between museums and media developments, thus avoiding a partial focus that stresses only aspects of these relations – for example, technology aspects such as digital information infrastructures, institutional aspects such as marketing or user aspects such as learning. Also, our approach to media invites a more historicised understanding of these relations and so escapes an unhappy focus only on "new media" or digital media.

At the same time, our focus on museums' technologically mediated communication environments also invites grander claims than are often found in museum studies. This is because the Handbook has an inclusive understanding of media and offers examples of museums' appropriations and interlacings of all known media technologies – print, radio, film, mobiles and computers – in addition to their key communication infrastructure, the Internet. This inclusive understanding helps us avoid binaries between digital and analogue media, between mass communication and personalised communication, since museums' mediated communication often operates across such binaries. Also, our inclusive understanding of media involves specifying gaps between strands in other museum studies, but also illuminating overlaps and productive interconnections, such as dialogue and "voice." We hope that the approach adopted in this volume will inspire museum specialists to contribute to this growing field, locating mediated practices of communication in relation to research such as archeological preservation or accounts of zoological taxonomies, thus contributing to the advancement of interdisciplinarity and depth of understanding.

This inclusive approach to media raises a further feature of the volume. For while museum research has seen an increasing professional and policy interest in museum engagements with their surroundings, most museum research and much museum practice take for granted, or even seem to neglect, the profound and constitutive importance of mediated communication for the very notion of museums. Museums are not media, but without media there would be little left of museums as we have come to know them. Unpacking the very concept of media is important for museum studies in order to overcome a deployment of the concept as a simple descriptor of trends or challenges towards, for example, social inclusion, outreach and participatory practices. Approaching media as an ensemble of communication technologies and modes of meaning-making enmeshed with the dynamics of museum practices allows us to understand wider transformations of museum organisation, visions and priorities of substance – from acquisition and conservation on to exhibition and community engagements.

The Handbook's grand claims in terms of mediated communication are echoed by media historian John B. Thompson. He argues that media is deeply implicated in the development of modern society, in the ways in which people can act in the world and how institutions constitute and conduct themselves: "Mediated communication is an integral part of – and cannot be understood apart from – the broader contexts of social life" (Thompson, 1995, p. 11). Still, in an age of globalised, technologically mediated, and networked communication, Thompson's "environmental" view of media needs to be taken one step further, a step that is also indicative of the Handbook's claims of the constitutive role played by mediated communication for museum environments.

Mediatisation

The emergence of mediatisation theory in media studies coincides closely with the period during which museums have faced the challenges of digital transformation. While providing a conceptual lens for gaining understanding of the media/culture nexus in general, we believe that the mediatisation perspective holds great promise for the understanding and analysis of the evolving status of museum media and communication; and that by approaching this still-formative subject from an interdisciplinary approach, insights that demonstrate the benefits of cross-fertilising media studies and museum studies can be produced.

In media studies, mediatisation theory seeks to reconceptualise the notion of media influence in a way that moves beyond measuring and interpreting their effects. The effects of media have traditionally been conceptualised on the one hand by "effects research" (by seeking insights about the influence of *media content* on individuals in areas like politics or advertising) and on the other by "medium theory" (which considers the ways that various cultures, as well as human perception itself, are shaped by *media technologies* such as print media and television). In contrast, mediatisation theory considers the entire cross-media ensemble as a moulding force on culture and society. By serving as a holistic theory about how media play formative roles in social and cultural transformations at different levels, mediatisation can be shown to function as a meta-process, on a par with processes such as individualisation, globalisation, and commercialisation. Mediatisation research, thus, explores how media change the ways in which we communicate and thereby partake in the social construction of reality (Couldry & Hepp, 2017). This approach lends itself to application as a set of methodologies for analysing different communicative domains; the contemporary museum being one such sphere.

While sharing many points in common (Lundby, 2014; Hepp, Hjarvard, & Lundby 2015), the mediatisation perspective comes in two distinct varieties: the constructivist approach (Hepp, 2013; Couldry & Hepp, 2017; Hasebrink & Hepp, 2017) and the institutional approach (Hjarvard, 2013; Strömbäck, 2008). One point on which these two strands agree is that "mediatisation" must be distinguished from "mediation." While mediation "refers to the process of communication in general – that is, the way that technology-based communication involves the ongoing *mediation* of meaning production" (Couldry & Hepp, 2017, p. 35), mediatisation studies instead shift attention "from the particular instances of mediated communication to the structural transformations of the media in contemporary culture and society" (Hjarvard, 2013, p. 2). As a leading proponent of mediatisation theory, Danish media scholar Stig Hjarvard asserts that "the influences of the media are not only to be found within the communicative sequence of senders, messages, and receivers, but also in the changing relationship between the media and other cultural and social spheres" (Hjarvard, 2013, p. 2).

The constructionist approach diagnoses mediatisation in terms of five interwoven trends that characterise contemporary media culture; namely: differentiation, connectivity, omnipresence, the accelerated pace of information and datafication. Each of these identified traits, in turn, offers a useful scaffolding by which discernible developments occurring in, for example, museum media and communication, can be correlated with their associated mediatised factors. The influence of differentiation, for instance, can be recognised in the significant expansion of media options available to museums today. The museum's evolution into a distinctively multi-platform entity has been exacerbated in large part because of the extended functionality afforded by a wide spectrum of new media technologies. Media are interconnected, both organisationally and in the ways we use them. The development of the connected museum as a distributed network of content and creators is reflective of developments in networked society more generally (Drotner & Schrøder, 2013). Under these socio-cultural conditions, many of the dichotomous relationships that museological operations are predicated upon (i.e. reinforcing institutional authority by establishing a clear separation of inside from outside) can no longer be perpetuated since media have become omnipresent and pervasive. Consequently, cultural experiences normally associated with museums – as a sanctioned and demarcated space for rarified, aesthetic encounters that take place at a remove from the real world – collide with everyday social practices. In the process, museal effects can happen "anytime" and "anywhere"; in fact, "everywhere." In the face of accelerated development, technology is experienced as transformative and disruptive. And while the pressure to innovate exerts itself in different ways upon established museological practices – arguably in many cases simply for change's sake – the "postdigital museum" would seem to present a number of significant new opportunities. One such opportunity responds to datafication. All media exposure is controlled, at least to some extent, by algorithms, while processes of digitisation create digital traces. At the same time, when many aspects of our social life are becoming the subject of digital capture and codification, one of the challenges facing "data-rich" cultural institutions is how the information and knowledge residing in their collections can be turned into new forms of cultural value for all. Rather than assuming a reactive stance towards media, could the renewed mission of a more fully "mediatised museum" be turned proactively towards sparking new paradigms into action; and in so doing, reconceive the role of the cultural institution by fostering a new appreciation of the value of content (digital and otherwise); how it is exchanged and transacted with.

Each of the above-mentioned trends carries potential promise as well as cautionary risk. Depending on circumstance, they may lead to either greater empowerment or domination, to increased participation and co-creation or surveillance and control. And when it comes to finding ways to research them, they should be treated as part of a domain, a *media environment* formed by the entire body of media that make up its media ecology. Importantly, this *media ensemble* encompasses not only the particular domain's subset of media forms, but also its *media repertoires*, whose routines of production and consumption draw upon both physical and virtual, onsite as well as online, authored and user-generated modes. These modes of practice relate to the individual's selection and use of media taken from the ensemble and application of it in everyday, social domains as practice-based *communicative figurations*.

Inspired by the German sociologist Norbert Elias, these arrangements can be characterised in accordance with constructivist mediatisation theory as being non-media-centric (Morley, 2009; Krajina, Moores, & Morley, 2014). Communicative figurations are characterised by their scalability, that is, in sizes that can range from small groups (a family, a group of friends, a community of practice) to organisations (an NGO, a museum) or a whole social field (a national public sphere, the global financial system, the machinations of an internationalised, elite cultural sector). Communicative figurations can be translated to the museum domain, as their following three features attest: a *constellation of actors* (i.e. a network of individuals who act and communicate, such as directors, curators, conservators, exhibition designers, educators, media producers, publicists and crucially, audiences); their *frames of relevance* (i.e. the "topic" or "project" which unites the figuration and reflects their typology, as art, natural history or science museums, for example) and, lastly, their *communicative practices* (i.e. what actors "do" and "say" with media as they produce or transform the domain through their curatorial programmes, exhibition-making practices, marketing and promotional strategies, learning activities, etc.). Most practicably, this theoretical framework lends itself to analytical operationalisation: "Communicative figurations offer us a cross-media and processual meso-level approach to the construction of social domains," because we may come to understand social domains "by researching their actor constellations, frames of relevance, and communicative practices" (Hasebrink & Hepp, 2017). Methodologically, the framework calls for a mixed-method approach that is representative of the different but nonetheless contributory kinds of knowledge that scholars as well as practitioners distinctively create in order to grasp the inherent complexity, dynamics and consequences of communicative figurations. As a reflection of the more constructivist tendencies of mediatisation, this framework offers the widest array of museum researchers with a systematic recipe for mapping communicative processes that influence internal, organisational change as well as generating external impact between the museum and an array of different stakeholders, or between the museum domain and other domains (i.e. education, politics).

Mediatisation, though, can also be conceptualised in systematic neo-institutional terms. A central precept to the institutional approach is that the media operate in terms of "logics" that function as ways of understanding how events and ideas are interpreted and acted upon in the media production process as well as *processed* by their audience (Altheide & Snow, 1979, p. 28). Media are constituted by their technologies (hardware, software, infrastructure) and aesthetics (genres, modes of narration, presentation or display), as well as the institutional properties reflected in their regulatory procedures and organisational frameworks. These media logics take effect through the ways that media institutions increasingly impose themselves on the logics of other social institutions, such as politics (Strömbäck, 2008), education or religion. "Mediatisation implies that other institutions to an increasing degree become dependent on resources that the media control, so that they will have to submit to some of the rules the media operate by in order to gain access to those resources" (Hjarvard, 2013, p. 23). To that end, it is by paying particular attention to the perspective of mediatisation theory – wherein mediatisation is regarded as the adaption of the logic of media rather than their technical application – that "the tension or interaction between the expanding media and other institutions with their [own] different logics that drive social and cultural change" is most clearly revealed (Lundby, 2014, p. 27). Our approach to museum media and communications responds to this distinctive "synthetic situation" (Knorr-Cetina, 2014) by attempting to better establish what an interdisciplinary approach can bring to identifying, versing, responding to and meeting the challenges – and implications – of museum transformation.

The mediatised museum

"The Media" has acquired the elevated status of an independent, or semi-independent, societal institution. Having effectively saturated the entire cultural environment, media themselves are no longer as dependent as before on other regulatory institutions. Just as virtually all aspects of contemporary life have become dependent on media to define personal as well as social reality, media exert an influence on how we understand the museum as a cultural institution – its claim to authority, the values it extolls and its relationship to other spheres of public life (including the social, political, economic and techno spheres). As was the case with the constructionist approach to mediatisation, the institutional approach equally lends itself to empirical analysis, especially in the form of exploring the extent to which the traditional, indigenous logics of an institution (such as a museum) or an entire societal sector (such as the Galleries, Libraries, Archives and Museum sector) adapt in order to respond to the mediatised conditions of institutional success or survival. Implicit here is the challenge for the museum of the 21st century to reappraise the currency of certain of its beholden institutional values today. What might this self-reflection reveal? Will the museum even still recognise itself?

The director of the Museum of Modern Art (MoMA), Glenn D. Lowry, has described the interface that exists between the goals and mission of the museum and the public it serves as a constantly shifting boundary that requires continual renegotiation. While specifically referring to how the mission that originally inspired the founding of MoMA itself endures to this day and is continually regenerated in the face of ongoing social, cultural and technological transformation, he asserts that the idea of the museum as a "disruptive institution" is embedded in the museum's original conception (Lowry, 2009, p. 9). While reputedly the American author and art collector Gertrude Stein pronounced that it cannot be possible to be both a museum and modern at the same time, disruptive institutions or enterprises "alter established paradigm[s] by pioneering new processes or reaching new audiences that are otherwise ignored" (Christensen, Baumann, Ruggles, & Sadtler, 2006). To illustrate his point, Lowry draws particular attention to how successive building projects undertaken by MoMA since 1939 have each in their own distinctive ways responded to "the changing position of the institution, expanding and altering its galleries and public spaces to meet the needs of an increasingly complex understanding of the period, as well as a dramatically enlarged collection and constantly growing public" (Lowry, 2009, p. 21). Noting the ambitious redesigns of the MoMA campus that continue the museum's project of ongoing adaptation at the turn of the millennium, he singles out the influence that both performance art and social media have had on transforming the nature of the experiential encounter with works of art and how these considerations challenge "the Museum to evolve beyond the physical and into the realm of the psychological and metaphysical" (Lowry, 2009, p. 29–30).

The insights gleaned from MoMA's experience can be extrapolated to facilitate a broader discussion of museum transformation at large. After all, the museum at heart is primarily a site of discursive practice. In MoMA's case, the museum's project has been reflected in an evolving architectural "programme" whose adherence to time-honoured historical references was disrupted progressively by the introduction of exhibition practices that "treat[ed] the galleries not as a venue for display of the past but as a laboratory where new ideas could be explored and where the public was invited to participate" (Lowry, 2009, p. 16). In architectural terms, a building's brief or "programme" is synonymous with the interpretation of its functional and structural, as well as aesthetic, requirements. By contrast, the transformative promise of the 21st-century museum may well be achieved through what might be construed as its "programme architecture"; that being the programming of its various museological functions across multiple media and communications platforms.

The movement of the cultural industry towards the informational economy – as reflected in the experience, attention and sharing economies – raises not insignificant challenges to the well-established paradigms that have come to be applied in very direct and immediate ways to how hegemonic institutions such as museums control meaning-making processes in Western society (Louw, 2001, p. 134). For their part, media-based art forms challenge the underlying basis of the traditional art world and its established, institutionalised practices, as these are represented by customary methods normally applied to collecting, conserving and exhibiting (Paul, 2008, p. 1). As influential new media historian and curator Christiane Paul points out, digital media exert broader cultural implications for the production, dissemination and reception of art by altering its basis from a predominantly spatial to a digitally-informed orientation. In recent years, these possibilities have developed beyond what might be thought of as the initial stage of "digitalisation" (with its emphasis on the technical and administrative processes involved with the digitising of museum assets and remediating this content through digital formats and ICT channels) towards what is posited today as a "postdigital" phase characterised by a more thorough and mature integration of digital content in museum practices (Parry, 2013). These practices are revealed through exhibition designs that realise the convergence of digital mediation and spatial practice, and various forms of museum communications and publication that facilitate new kinds of exchanges between the museum and its audiences. The deepening interdependency between formally regulated and informal economies is reconfiguring the basis of how cultural authority can still be exercised by museums. Even as the Internet has made activities such as file sharing, unauthorised distribution and copying more visible, it is important to recognise that technical, cultural and commercial disruptions associated with such informal, non-sanctioned practices are not only or merely related to the digital realm (Lobato & Thomas, 2015, p. 4). The museum's "Collect-and-Share Economy" – with its generalisable reorientation towards contemporaneity and away from the privileging of substance, solidity and the enduring qualities associated with "permanent" collections towards activity, performance and the event-based characteristics exhibited by temporary exhibitions – illustrates the evolutionary pressures that are being exerted upon it in the mediatised age.

The shifting *disposition* of the cultural role and social function of museums from "custodial" responsibility to facilitating more "convivial" interactions is being revealed in the adaptation of museological modes of operation, their organisational structures and strategies, as well as curatorial and pedagogical practices. Disposition describes "something of what the organisation is doing" as an unfolding relationship between states of actuality and potentiality; as "a tendency, activity, faculty or property in either beings or objects – a propensity within a context" (Easterling, 2014, p. 72). Recognised through agency, activities and actors, not static arrangements or collection of objects, disposition is "immanent, not in the moving parts, but in the relationship between components" (Easterling, 2014, p. 72). Different forms of cultural communication are precipitating the need for rethinking the ways and means, as well as the whys and wherefores, of collecting, conserving, exhibiting and disseminating cultural heritage (tangible and intangible). How might these mediatised interactions catalyse the museum's potential to serve as a "contemporary utopian laboratory" (Kirshenblatt-Gimblett, 2004) of and for the future? How can a radical museum that is "more experimental, less architecturally determined, and offering a more politicised engagement with our historical moment" (Bishop, 2013, p. 6) be realised?

A mediatised turn in museum studies

Mediatisation research charts the "changes in practices, cultures and institutions in media-saturated societies, thus denoting transformations of these societies themselves occurring at all scales, including what might otherwise be described as 'everyday' interactions" (Lundby, 2014). Stated simply, the core of mediatisation is found in its social and cultural transformations, not in technology itself. Mediatisation is a long-term, longitudinal process that implies transformations of practice and institutions taking place as an interplay between changes in communication and media and the personal, societal, political and cultural contexts in which they operate. Museum mediatisation configures the ongoing encounter between processes and structures, forms and content operating across domains and at different scales. It challenges us to think how this meaning-making process might be seen as the chief challenge that a "mediatised turn" presents for museums today. Arguably, turning focus towards a thoroughly mediatised museum lends itself to a wider socio-cultural analysis of how its attendant museological and communication processes actively exercise and perform agency in conjunction with the cultural and material structures wherein they take place (Hepp & Krotz, 2014, p. 9). Most challengingly of all, it leaves us to contemplate the "future of" (or conversely and more provocatively, to consider the real possibility of the "end of") the museum as we have come to know and understand it.

This more precise definition of "media," and this more pervasive concept of "mediatisation," both have deep consequences not only for museum practice, but also for museum studies scholarship. As much as we might acknowledge and trace the mediatisation of the museum, so we might also experience, concurrently, a mediatisation of the subject of museum studies itself. Just as the museum becomes ever more immersed within a media-rich and media-driven society (with its proliferating platforms, increased connectivity, omnipresent media technology and datafication of culture), so both the focus and the reasoning of museum studies is changed. Not only does the subject see connections and contexts in new ways (recognising the wider and more holistic ecologies of industries and sectors, and of communicative practices, into which museum media needs to be understood), but museum studies as a subject area has the opportunity (we might dare to say, the obligation) to understand the museum within the logic of media. In short, this is about museum studies predicating itself upon an extended set of (media-based) principles, equipping itself with a more precise (media-informed) nomenclature and allowing itself to realign and discover a new set of (media-driven) lines of investigation.

As a relatively young academic subject used to defending its place in the academy, ecumenical in its disciplinary outlook and highly responsive and sensitive to sectoral change, museum studies is, by design, adept to adapting; it is "a discipline which inherently invites, if not requires, practices and ideas gleaned from a wide variety of fields" (Walklate & Richards, 2012, p. 461). Whether in its movement from "minority subject into the mainstream" (S. Macdonald, 2006, p. 1), or its constant movement between informed practice, praxis and practice-led scholarship, or in its (constructively) willful denial on any single discipline as its centre, or in its "repeated attempts to reinvent and redefine" (Knell, MacLeod, & Watson, 2007, p. xix), and its openness to reconfiguration and re-assembly (be it by the documentational turn of the 1970s, the educational turn of the 1980s and 1990s, the social turn at the start of the new century), museum studies has been – and will continue to be – intellectually and methodologically agile.

And yet, the concepts of "media" and "media technology" have been somewhat compartmentalised, with particular scholarly communities taking ownership over certain themes. The field of museum education, for instance, made an early claim for the subject of "media," and owing to the early reasoning of the first proponents of the area, an enduring bond was quickly set up between the study of media and communication (Hooper-Greenhill, 1998). And it is an alignment that has been sustained for over a generation of museological writing. A similar ownership has tended to surround media technologies. In this regard, it has been the areas of what was once called "museum computing" and today is more familiarly termed "digital heritage" that have monopolised discourse in this area. Energised by rapid progresses in technology, empowered by the significance these new platforms and channels would appear to have on the museum and society at large and with an acute sense of obligation to establish new standards, protocols and policy to facilitate and justify their use, digital heritage scholars have been the responsible guardians of understanding museum communication technology (Parry, 2010). However, the opportunity for museum studies now – following its mediatised turn – is to liberate these topics from their intellectual habitus, to recognise a wider relevance to a more extended community of interest, and to allow them to become more openly referenced, understood and activated in the subject at large. Just as media is not about solely the properties of communication technologies, and just as digital research does need to dominate research on communication technology, so, mediated communication (digital and non-digital, technology-orientated as well as process and practice-orientated) can now catalyse discussion and research across the varied topography of museum studies. The opportunity is for new writing on mediated communication in the museum to ignite new conversations in areas such as visitor studies and socially engaged practice (Wong, 2012), as well as inform and sustain the recent rise and intellectualisation of museum design literature (Macdonald & Basu, 2007; Parry, Page, & Moseley, 2018).

The structure of the volume

The internal structure of this volume has been organised to rehearse some of these new locations for writing on museum media, and in some cases to initiate and give voice to some of these new subject alignments. To highlight these features of criticality, and to remind the reader of the agenda and claim sustained through the volume, each of the five parts is prefaced with a prolegomenon, differentiating between: deeper historical foundations in Part I; wider systemic contexts in Part II; varied modes of practice in Part III; visual rhetoric of key themes in Part IV; and future trajectories and directions of scholarship in Part V.

The authors in Part I (Foundations) share an assumption that mediated communication has always been fundamental to the museum. Common across their work is also an objective that this constitutive role of media in the museum can best be demonstrated through a historical approach. Back through the modern digital revolution, past the advent of broadcast media, back into the 19th century and the origins of display technology, theirs is an exercise in the "long view" on museums and media. And, crucially, rather than a clean timeline of media development, this is rather a time-based approach that exposes the entanglement of interpersonal and mediated modes of communication that have characterised the formative role played by media in museums through history. The volume's narrative then pivots in Part II (Environments) to demonstrate that media cannot only be studied as material technologies across time, but also as symbolic meaning-making processes across space. Slicing its subject in this alternate direction, the chapters in this part work together to show the significance of understanding media within the wider contexts of companies and political regulators (the administrative terrain), but also within the context of criticality, creativity, democracy and learning (the socio-cultural terrain). Part III (Practices) re-orientates the discussion yet again, but this time to hone in on the part played by media in the practices of museums, particularly in terms of their relations to audiences, to their modes of organisation and to their strategies of development. Grounded in the everyday work of the museum, the chapters aim to show new and emerging modes of working (particularly with respect to co-design and co-curation), as well as some ways of adopting more systematic studies of mediated modes of communication. Part IV (Incident(al) readings) offers an evocative, visual expression of the relationships formed between the museum as cultural construct, media that give it shape, and communication which inflects meaning and value. With these new critical lenses verified, these new critical practices initiated and (throughout) these new assumptions on the mediatised museum enacted, the final part of the volume (Part V: Directions) then provides a clearing for a group of authors to share their own personal, intellectual and professional trajectories with media and museums. This final set of chapters revisits, in turn, the different facets of the mediatised society (connected and data-full, technology-rich and informational), and, as they do, they perform for us versions of future mediatised museum studies scholarship.

Taken as a whole, these five sets of original chapters work self-consciously as an ensemble to share a more nuanced and precise understanding of media, media concepts and media terminology. They recognise the museum as an organisation and a space in which media has a constitutive role. They acknowledge museums within a mediatised society. And they accept mediatisation not just as a context for the museum, but as a framework for how everyday life is conducted. Consequently, the subject and contents of this volume go beyond simply delineating another sub-subject or micro-discipline. The intention here is not to ring-fence yet another topic for review, or to petition for another agenda item for museological debate. There is a grander claim here – about how to do museums studies, and how to be a museum.

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Part I
Foundations

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Today, any potential visitor to a museum soon realises that engaging with museums means interacting with a wide range of communication media: from online information about visiting hours, special exhibitions and transport facilities, on to invitations to follow the museum on social network sites ("social media"). Actual museum visitors also meet a variety of media in the form of printed leaflets and catalogues, information screens and possibly mobile options for online interaction along the way. Many museums are also keenly aware of the importance to communicate a clear public profile in a competitive cultural environment where many vie for the attention of visitors, politicians and funders. Behind the scenes, mediated modes of communication equally orchestrate museum professionals' daily work, be it content management systems for collections, archival infrastructures or printed newsletters to the staff.

This part offers an introduction to understanding how mediated communication has always been fundamental to the ways in which museums organise their internal as well as external relations. Perhaps because the emergence of media technologies and media applications have proliferated with accelerating speed in the last three decades, museums' professional engagement with media is often considered to be a fairly recent phenomenon. This assumption is indicative of the dilemmas and challenges that are taken up and analysed in this first part of the Handbook.

The contributors set museums' mediated communication within a historical perspective in order to trace the continuities and the possible changes in museums' interactions with their surroundings. In so doing, they stress the importance of avoiding two pitfalls in studying museums' relations with media. One is what some historians term "presentism" (Fischer, 1970), that is, a tendency to use the present as an analytical prism through which the past is simply refracted. Such a view on the past tends to minimise historical difference and distance. It obscures media technologies and appropriations that differ from what we know in today's deeply mediatised environment; or it minimises museums' organisational or legal arrangements that do not resonate with contemporary priorities or values. The other pitfall is to underestimate the fact that historical "distance is not simply given, but is also constructed" (Phillips, 2004, p. 89). Viewing the past as simply reflecting the passage of time tends to disregard that the viewer holds particular forms of engagements with past themes and issues. The past is about something for someone also when it comes to museums' mediated modes of communication. So, historians invariably make choices and position themselves when studying media in past museum environments.

Balancing these two pitfalls, the contributors endorse and document the formative role played by media in museums through history. Their detailed and often case-based chapters serve to nuance binary and normative narratives of media as levers of either innovation, immersion and visitor agency and engagement; or, conversely, as levers of Disneyfication, marketisation of public communication and a diminishing of the auratic qualities of museum objects.

The five chapters were selected in order to display some of the key approaches to studying museums' media environments in a historical context. In their accounts, the authors range widely across theoretical conceptions and temporal perspectives, from a mainly deconstructionist view on museums as media environments in a long historical view (Anders Ekström, Peter Samis) to a mainly personal focus on practices of digital appropriation since the 1990s (Samis). They also vary in their professional background (ICT studies, media studies, history of science, museum history), thus testifying to the often interdisciplinary range necessary to study museums' mediated communication.

Taken together, the chapters in this first part take up a number of key questions and debates of relevance for anyone wishing to understand museums' mediated communication from a time-based perspective. The first question concerns the very notion of media. Should media be defined and studied as particular material technologies conveying various forms of information across time? Or, are media rather to be understood as symbolic meaning-making processes circulating across various spaces, including the museum? Historians of technology tend to favour the former definition and focus on the formative roles played by the introduction of new technologies for institutions, infrastructures and legal arrangements (Winston, 1998). Media and communication historians are often more attuned to the latter definition and focus on the changing substance of communication and its societal and personal impact (Thompson, 1995). The authors in this part offer differing answers, ranging from Samis' technological stand in unpacking the organisational implications of museum digitisation since the 1990s to Susan Anderson's mapping of audiences' changing meaning-making practices. Both Anderson and Bodil Axelsson push familiar definitions of media. Reflexively, they insist that digital data and algorithms now produced by museum professionals and visitors alike serve as hidden infrastructures of power held by actors in the commercial domain well beyond the familiar binary understandings of media as material technologies or as symbolic meaning-making processes.

The second question concerns which aspects in the communicative flow are central in order to understand museums' mediated communication across time. Should studies be concerned with the professional design, production and organisation of mediated communication? Or should we ask questions about the ways in which mediated modes of communication are taken up, represented and understood by people interacting with the museum? While most scholars in principle favour an inclusive approach that encompasses both a museum professional (or "sender") perspective and a people (or "receiver") perspective, most historical studies in practice focus on one of these perspectives. These choices have implications for how continuity and change are accounted for.

As noted, choices are key to any historical study. But more important in the present context, the choices made materialise as different temporal arrangements when studying mediated museum communication across time from either a professional or a people perspective. At least since the advent of modern museums in the 18th century, a professional perspective on mediated museum communication in a time-based perspective will often involve institutional, legal and political contexts where change takes a good deal of time to take effect. For while political decisions to cut museum funding or major private donations are examples of sudden changes, the implications of these events on how museums may change their professional perspective on mediated communication are rarely as immediate. So, continuities will tend to figure more clearly than change when adopting a professional perspective on historical trajectories in mediated museum communication. As Axelsson (this part) notes: "The agency of display has not necessarily been reformed in its entirety" with museums' introduction of online databases that are seemingly more user-led. A people (or "receiver") perspective on mediated museum communication will often be concerned with individual or social contexts of appropriation, be it shifts in mediated communication as part of exhibition spaces or media ensembles beyond the museum walls. Such contexts more easily lend themselves to studying change, since shifts in individual or social behaviour, perception or practice are more perceptible than are shifts in, for example, organisational procedures. So, Ekström (this part), in his incisive chapter on late19th- and early 20th-century world fairs and exhibitions as precursors of the modern museum, notes how these public spaces engendered a novel "embodied politics of participation, shaped in the interaction between the audiences and the displays as well as particular media."

A third key question illuminated by the chapters in this part is how to understand the entanglements of interpersonal and mediated modes of communication, and how museums have practiced and developed these entanglements. While media have always been central to museum communication, as noted above, many museums harbour an understanding that the "mother" and model of communication in museums is interpersonal communication in the physical museum where visitors meet professional guides and curators or where they take part in events or learning processes involving speakers, performers or interaction with teachers. Such an understanding easily leads to a definition of mediated communication as processes taking place beyond the museum walls – an add-on to, or even an aberration from, the "real thing" of immediate, interpersonal communication and interaction. Thus, museums may downplay a development of mediated communication and favour direct interaction with visitors; or, they may attempt to use media as tools to innovate modes of communication in the physical museum that are perceived to be outmoded.

Chapters in this part document how actual museum developments have repeatedly disproved this binary understanding of mediated and interpersonal communication. Mediated communication is very much part of innovation in the material museum space (Samis, Peter Pavement); interpersonal modes of communication are involved when museums have entered public spaces such as fairgrounds and markets (Ekström). The large-scale uptake around the world of social network sites serves to further the nesting of interpersonal and mediated communication. In empirical terms, this development has radical implications for professional curating practices (Axelsson). In theoretical terms, scholars and practitioners need to rethink prevalent definitions of visitors and audiences (Anderson), and they need to develop more encompassing and dynamic means of capturing people's meaning-making practices at museums.

Taken together, the chapters in this part point to the continued relevance of analysing and understanding museums' mediated communication from a time-based perspective. Such a perspective illuminates the fallacy of current trends to equate mediated communication with digital technologies, with institutional branding efforts or with people's participatory practices. The empirical cases analysed in this part serve as robust reminders that media have always been integral to the ways in which museums are developed, understood and practiced. Indeed, the authors' inclusive understanding of mediated museum communication invites us to reflect on the very definition of museums as more than simply material settings defined through their handling of objects. Museums are also institutionalised catalysts of societal interaction; they are meeting-grounds of understanding and misunderstanding with media as midwives.

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I.1

Walk-in media

International exhibitions as media space

Anders Ekström

In opening his seminal essay on "the exhibitionary complex" – which was first published in the journal *New Formations* in 1988 and later reprinted in *The Birth of the Museum* (1995) – Tony Bennett emphasises that the modern museum was shaped in the context of a diversity of 19th-century exhibitionary practices, including dioramas and panoramas, national and international exhibitions, arcades and department stores (Bennett, 1988; Bennett, 1995, p. 59). Starting from such a broad historical contextualisation of the culture of display, and in close relation to the emergent field of visual culture studies (Crary, 1990; Schwartz, 1998), two major and interconnected strands of research were developed in the 1980s and 1990s. One was the Foucauldian investigation, as exemplified by Bennett's work, into the visual and architectural organisation of 19th-century exhibitions and museum spaces, and, above all, the knowledge regimes and "technologies of the self" by which the visitors became engaged in the displays. In later research, this approach has proved especially productive in empirically rich case studies of the ensemble of visual and participatory techniques that were developed to make various social categories materially present in the displays and possible to work on in conjunction with the audiences (see, for example, Lundgren, 2013). The other strand was the analysis of 19th- and early 20th-century museums, world's fairs and international exhibitions as a space of social and cultural representation. Focusing on the exhibitionary complex as a powerful tool for the communication of exhibition ideologies, fuelled by Western visions of modernity, this research into the politics of display has been of great importance to the understanding of a wide range of interconnected cultural processes related to nation-building, colonialism and heritage formation (see, for example, Ekström, 1994; Greenhalgh, 1988; Karp & Lavine, 1991; Macdonald, 1998; Mitchell, 1989; Rydell, 1984).

This chapter takes a different approach, however. Rather than being concerned with the messages and meanings of exhibitions at a representational level, it seeks to outline the nature of 19th- and early 20th-century temporary exhibitions as a media space, that is, a space defined by and practiced through the pervasive presence of media. In particular, I focus on the material encounter between the visitors and various media and communication technologies. Historical research has pointed to the formative role of museums and temporary exhibitions in the making of modern public space. Indeed, several case studies illuminate how 19th- and early 20th-century exhibitions functioned as public laboratories, engaging a range of new and old media to negotiate the meaning of civic concepts and identities, including the delineation between audiences and publics (Ekström, 2008; Ekström, Jülich, Lundgren, & Wisselgren, 2011). Here, I take this argument further, suggesting that the genre of international exhibitions, as it developed in Europe and North America from the mid-19th century onwards, prefigured the intensely media-focussed sociality of modern public spaces. Key to this historical form of sociality was an embodied politics of participation, shaped in the interaction between the audiences and the displays as well as particular media, but also in the conversations, physical movements and performative interaction that the exhibitions invited the visitors to develop between themselves (Ekström, 2010).

The chapter points to four aspects in particular that constituted the early exhibitions as media space and their relevance to a wider history of media sociality. The first aspect is the new modes of media visibility that were promoted at international exhibitions. From the inception of this genre of exhibition in the mid-19th century, the deliberate and spectacular display of various media and communication technologies was frequent. This was manifested in a profusion of "media firsts" and shaped emerging patterns of media interdependency. Second, the chapter points to the practices of onsite media production at the exhibitions and exemplifies how they involved the visitors in acts of media creation. This aspect underscores the participatory nature of the interaction that developed between the visitors and exhibitionary media. The third aspect concerns the thoroughly mediated character of the visitors' experience of the exhibitions. Here, this issue is approached not on a content level – that is, as an analysis of the representational power of the displays or through the overall scripting of exhibitionary spaces (cf. Duncan, 1995) – but by focusing on how the audience literally walked into the medium of exhibition itself and became part of its performance. Finally, the fourth aspect regards the contribution of the exhibitions to the formation of a kind of media sociality that was not defined by social interaction being increasingly mediated, but rather by media culture becoming a centre of public interaction. In sum, the focus of this chapter is thus on the novel ways that the exhibitions enabled of literally seeing, knowing, talking about and "being with" media in public spaces.

To establish this perspective, it is necessary to draw from literature on media history and theory. Critical museology in the 1980s and 1990s (Vergo, 1989) did not approach the exhibitionary complex as a media complex. Its focus was on the politics of collecting and categorising, on issues of memory and identity, and the semiotics of the objects on display. In short, it forcefully theorised the exhibitionary complex as a space of representation (cf. Bennett, 1995, pp. 7, 75–76, passim). While having the advantage of foregrounding the agency of display, this approach did not however translate into more detailed studies of the materiality of mediation in exhibitionary practices. Neither did the new museology to any significant extent approach museum visitors from the perspective of a history of audiences (Butsch, 2000, 2008) and public sphere theory (Livingstone, 2005). For this, it was necessary to turn to other fields of inquiry and combine exhibition studies with historical research in areas such as visual culture and early film (Gunning, 1994). In the 1990s and 2000s, with an increasing interest in issues of intermediality and the broadening of the concept of media that was formulated in the context of the digital turn (Thorburn & Jenkins, 2003), historical studies on media practices before the broadcasting era proliferated (Gitelman & Pingree, 2003). This new focus on old media connected with earlier work on the public spaces and modes of social interaction enabled by 19th-century media and communication technologies (Hansen, 1991; Marvin, 1988). When seen from the perspective of this media historical turn, the study of international exhibitions became less oriented towards the history of the museum institution and inserted instead into a broader context of emerging media cultures (Ekström, Jülich, & Snickars, 2006).

Media visibility

From the mid-19th century and onwards, international exhibitions and world's fairs, different in scale and geographical reach and yet sharing the traits of an emerging genre, were organised in major cities across Europe and North America. One common trait that developed across local events was the manners in which these exhibitions promoted a new and intensified visibility of media in public spaces. The display of media technologies and modes of media production were from the outset among the core attractions in the exhibition grounds. Exhibitors showcased and explored their technologies in close interaction with the audiences. The focus of attention was primarily on the technologies and the media-specific effects they enabled, and the onlookers were inventively engaged in the performances. There were thus many announcements of local (and mostly apocryphal) "media firsts" in the history of 19th-century exhibitions, framing, for example, the phonograph, cinematography and X-ray imaging as new and spectacular technologies (Figure I.1.1) (see, for example, Jülich, 2008; Natale, 2011).

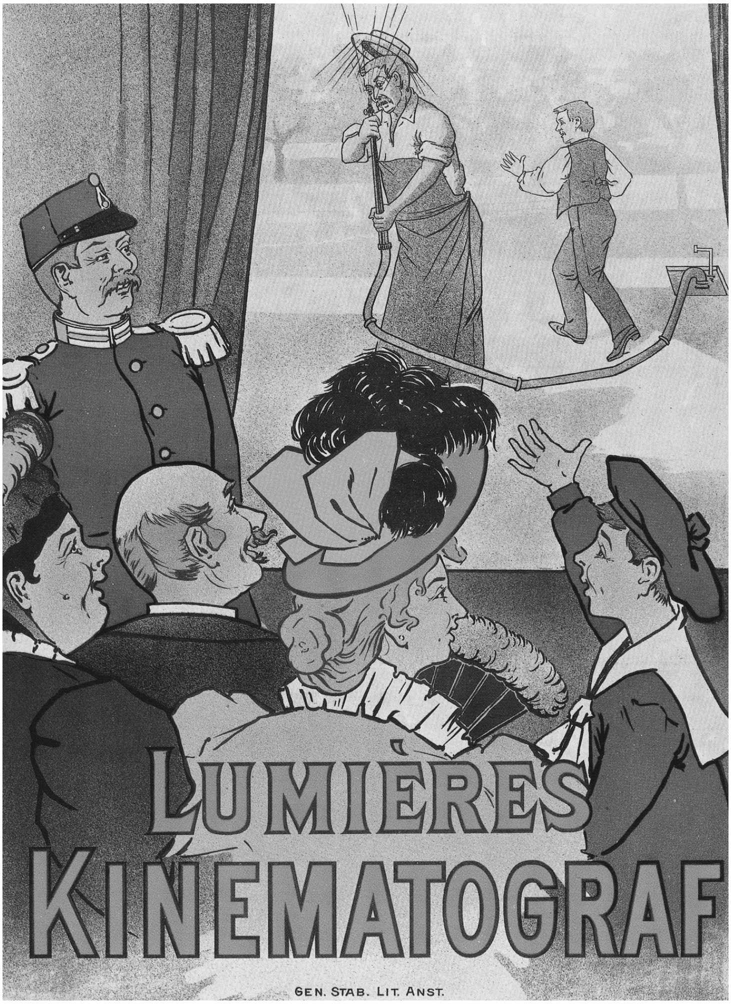

Figure I.1.1 Film poster for the Stockholm Exhibition of 1897. Courtesy the archive of the Nordic Museum, Stockholm/Wikimedia Commons.

The presentational framework for such displays was characterised by what film historian Tom Gunning describes as an "aesthetic of attraction" (Gunning, 1990). This was a style of media exhibition(ism) that focussed attention on the technologies themselves as much as their representational powers. At early exhibitions and 19th-century amusement grounds, this aesthetic was developed in the context of a long-standing tradition of technological spectacle (Young, 2003, p. 232) and travelling showmanship (Musser, 1991). However, this tendency of putting media technologies on self-referential display continued to be developed in new directions in exhibitions well into the 20th century. The continuity of these practices encouraged an intermedial understanding of technologies that were connected by the context of their display. It also engaged the audiences in informal ways of knowing media through comparison and conversation, making the topic of media innovation and display a centre of interaction among exhibition visitors (Ekström, 2010, pp. 221–235; Ekström, 2011).

Indeed, an emphasis on media innovation was also characteristic of the overall narrative of modernity that the international exhibitions fostered. From the great London exhibition of 1851 to the Paris world's fair of 1900, this rhetoric attached an emblematic status to developments in media and communication technologies. One of its most frequent manifestations were elaborate displays celebrating the machinery of modern society's increasing speed and connectedness, for example railway carriages, telegraph boards, bicycles and telephones (Figure I.1.2). Another instance of this fascination with technological communication was the fashion of inserting mechanical movement in the open spaces of the fairs. Innovations such as moving sidewalks, Ferris wheels, and rotating coffee shops all conveyed a sense that the experience of the modern world was bound up in a fleeting and mediated perception. As the amusement areas at the major exhibitions grew larger, attractions that offered various forms of movement and virtual travel, such as moving panoramas and mechanical joyrides, proliferated.

Another instance of the visibility of media at the exhibitions was individual displays and buildings that were organised by media companies. In a series of four exhibitions in Stockholm

Figure I.1.2 Interior from the Machine Hall at the Stockholm Exhibition of 1897. Photograph Stockholm City Museum/Wikimedia Commons.

between 1866 and 1930 there were several examples of this. In an exhibition in 1897, a major Swedish daily invited the visitors to their own pavilion. In addition to a small display, it contained resting and reading rooms where the visitors could get an update of the day-to-day press coverage of the exhibition. Another popular item in this media exhibit was a public phonograph. It was placed on the porch of the pavilion, offering the visitors to get connected to one of the ear tubes while watching and being watched by the passers-by. It was a typical example of the media-oriented sociality that developed among the visitors. Neither was it a coincidence that one medium (the press) introduced another (the phonograph). A number of cross-media practices developed at these exhibitions, and the newspaper press played a significant role in this exchange. Its visibility at the 1897 Stockholm exhibition was further enhanced by an international conference for journalists, which used the occasion of the exhibition for public manifestations of the press as an institution with its own history and rituals (Lundell, 2006). Individual newspapers and their reporters also acted as participants in one of the most spectacular acts of media experimentation that took place at the 1897 exhibition. It consisted of the shooting of a series of advanced aerial photographs from the gondola of a balloon, which ascended from the open space in front of the main exhibition building. It was followed by thousands of spectators in the exhibition grounds as well as in other parts of the city (Ekström, 2009). For these and other reasons, and in relation to the overall history of 19th-century temporary exhibitions and world's fairs, it makes more sense to describe the medium of the press as an extension of the medium of exhibition rather than an external source documenting its history.

Thus, in suggesting that the exhibitionary complex was a media complex, I am not simply referring to the use of various media in the displays, which is how "exhibition media" is sometimes defined (see, for example, Macdonald, 2007, p. 153), but rather to the extent to which the experience of 19th- and early 20th-century exhibitions was organised around media encounters. The medium of exhibition helped to make other media visible not only by the elaborate display of old and new technologies, but by connecting various technologies and media practices into a media culture. The advantage of thinking through a concept of media culture in this context – as compared to neighbouring concepts such as media ecologies, networks or systems (see, for example, Harvard & Lundell, 2010) – is precisely that it is not too systemic, and that it locates the emergence of transmedial connections to the activities of exhibitors and audiences rather than the networked character of a fixed set of technologies. As Hay and Couldry (2011) note, there is sometimes a tendency in contemporary media studies to use "culture" to denote that which is supposedly new – as if culture was a cumulative element in media history – for example in the notion of a new "convergence culture" (Jenkins, 2006).[1] But in the context of this chapter, the concept of culture works in the opposite direction as a way of investigating links and transformations both in and over time. It is, in other words, a concept for thinking about the activities and agencies by which history moves. The encounter with many different and yet connected technologies and media practices at 19th- and early 20th-century international exhibitions did not only enable the audiences to develop tastes and skills in media consumption. As will be exemplified in the next section, the visitors to these sites were also engaged in media production.

Moving through, doing media

Besides connecting and displaying existing media and technologies of display, the exhibitions also installed new media genres. One example was the exhibition journal. It was used to advertise and document the exhibition and was distributed on site as well as to prospective visitors and more far-off readers. In the series of Scandinavian and international exhibitions that were organised in Stockholm, an "Exposition Journal" [*Expositions-Tidningen*] was produced already in connection with the first exhibition in 1866. It took off in a media-oriented fashion by announcing in the editorial of its first issue that "publicity" [*publiciteten*] was of major importance to the success of the exhibition, and especially the publication of images. According to the editors, the journal was going to use novel technologies for the reproduction of images as well as for making the distribution of the journal both faster and cheaper than ever. Indeed, these new technologies for the publicity of the exhibition in themselves deserved attention as "objects of display" [*expositionsartikel*]. This was more than a gesture. The venture of producing the journal, it was explained in another article, coincided with an attempt to improve the methods of photolithography, associated with Rose-Joseph Lemercier and further improved by Alphonse Poitevin in the 1850s. Through an initiative from the editors, a Swedish photographer, C. J. Malmberg, had been able to develop a similar method, and the journal was going to showcase the progress of this method throughout the exhibition season. However, several months into the exhibition, illustrations in the journal were scarce, and the editors had to admit that their expectations of this media technological experiment had failed. This was also one of the reasons why they had to stop publishing the journal before the exhibition was closed.[2]

This episode exemplifies that not only did early exhibitions entail various forms of media visibility and new media genres, there was also an emergent tendency of turning processes of media (and news) production into objects of display. In other words, this meant that the exhibition medium was used for circulating media technologies and practices as media content. This particular form of media exhibitionism – media on media – was also increasingly taking on the characteristics of a genre, as practices were copied and refined from one exhibition to another.

The continuity and development of such modes of display can be studied both between exhibitions in different countries and in local series of exhibitions over longer time spans. For example, the Stockholm exhibition of 1930, which has been primarily remembered for its functionalist architectural program, contained several displays on modern media and communication technologies that followed in the patterns of and in some instances made explicit references to exhibitions around the turn of the 20th century. One display related the production of news in a series of wall-sized images, from the collection of news material, through the writing and printing processes to the distribution of the newspaper to the readers (Habel, 2002, p. 32).

In an exhibition in Stockholm more than 20 years earlier, the full production process, including the printing of the exhibition journal, was located on site. The idea of displaying a working printing press was discussed by several competing dailies already in connection with the 1897 Stockholm exhibition, but it was only realised in 1909. Besides publishing daily news and announcements from the exhibition, the exhibition journal was meant to work as a public demonstration of the production of a modern newspaper. It also engaged the audience in various activities, for example, contests that were related to the exhibition and published in the journal. It was also possible for the visitors to announce their presence at the exhibition by having their name, title and hometown published in the journal. As the exhibition season progressed, the lists of visitor names in the journal grew longer. In earlier exhibition journals, for example in 1866, this form of visibility was reserved for the celebrities among the visitors, but in 1909 it was offered to everyone (Ekström, 2010, pp. 212–214). It exemplified emergent forms of public sociality that not only enhanced the visibility of the medium but also of the visitors in their role of media audiences.

The ways of consuming media production that developed at these exhibitions also involved the visitors in shaping the content of individual displays. Immersive techniques proliferated at late 19th- and early 20th-century world's fairs and international exhibitions, especially in the amusement areas (see, for example, Gunning, 1994). Panoramic forms of virtual travel, historical re-enactments and technological performances coincided with and reinforced the overall theatricality of the medium of display (Ekström, 2012; Sandberg, 2003, 2011). The popularity of and growing familiarity with such attractions meant that the more experienced audiences entered exhibitionary spaces with participatory expectations.

At the 1909 Stockholm exhibition, the exchange between modes of display in the main buildings and the amusement area was apparent in several individual pavilions. One example was the statistical displays developed by Ferdinand Boberg, a most prolific Swedish exhibition architect who created buildings for a series of world's fairs and Scandinavian exhibitions around the turn of the century (Ekström, 2008). The pavilion that Boberg referred to as a "machinery of statistics" contained a series of moving miniature scenes, driven by electricity and figuratively representing extracts from the official statistics of Sweden. To the more experienced audience, this style of display ingeniously combined intermedial references to a series of well-known techniques in 19th-century popular visual culture such as dioramas, moving images, miniature theatres, tableaux vivants and picture statistics. In addition, several of the scenes related developments in media and communication technologies, such as the contemporary frequency of railway travel, telephone calls and telegraph messages in the early 20th century. Two months into the exhibition, a contest was announced that invited the visitors to suggest new installations in the display. Many of the proposals from the audiences also concerned the speed and motion of modern communications. One of the participants proposed "a world map with ships and trains in constant motion." Another envisioned a series of "living images of different speeds, from the speed of the messenger boy to the speed of the swallow." A third proposal suggested to "visualize the number of words in the Atlantic cable."[3] Indeed, the majority of these participatory activities mirrored the ideas of the organisers and thus testified to a general tendency of such activities of being faithful to the format. Eventually, a number of the proposals were used for renewing the display, and the names and titles of the contributors were advertised by the press and in the exhibition journal. Individual visitors thus became visible both as audiences and amateur celebrities in their encounters with the displays (Ekström, 2008, pp. 43–45; Ekström, 2010, p. 216).

Performing audiences

However, the most decisive aspect of the thoroughly mediated experience of the visitors to 19th- and early 20th-century international exhibitions was connected to the characteristics of the medium of exhibition itself. In various discussions of the position of exhibition audiences, much critical focus has been placed on the overall scripting of exhibitionary spaces, the intended routes through the displays inscribed in architectural plans and guidebooks and the representational initiative of the organisers. But the exhibitions combined elements of a mass medium, and its few-to-many modes of communication, with that of a collective performance in which the relations that developed between the visitors were as crucial for the experience of the event as watching the displays in a prescribed manner. The exhibition was a medium for the audiences to literally walk into. As for politics, this calls for an attention to the politics of participation; that is, to mechanisms of inclusion as much as exclusion, to the routines and improvisations by which the visitors were drawn into the media sociality of the exhibition and to their transformations into audiences and publics that this entailed (Ekström, 2010, pp. 22–23; Ekström et al., 2011).

I have already exemplified how exhibition visitors became performers in the demonstration of new and old media. The theatricality of display was also emphasised in the tendency towards historical and geographical reconstruction that proliferated in local as well as international exhibitions. For example, at the 1897 Stockholm exhibition, grand scale reconstructions included historic sea battles and the rebuilding of parts of the medieval city. In the historic city, street theatres conveyed a sense of playfulness to the open space between the main buildings. Throughout the exhibition season there were reports of spectators intervening in the plays. Added to this was a popular culture of re-enactments and scenic entertainments that entered the major exhibitions through the amusement areas but eventually affected other parts of the exhibitions as well. As Mark Sandberg (2003) has shown, a parallel culture of display in wax museums and open-door museums systematically diffused the distinction between the displays and the onlookers. For example, this was achieved with simple techniques, such as placing a mirror in a wax group that made the spectator appear in a historic scene or in the company of a group of celebrated actors. But it was also the rationale behind a major change in display aesthetics at the international exhibitions around the turn of the 20th century. Increasingly, the exhibitions were more tightly themed, with the exhibits organised in milieus and complete interiors for the visitors to walk through and inhabit. Together, these developments created a particular kind of "participatory immersion" (Sandberg, 2011, p. 65) characteristic of the visitor's physical encounter with exhibitionary spaces (Figure I.1.3).

A sense of performance among the audiences can also be traced to descriptions of the ways in which they interacted with each other. Each exhibition had its gathering places. For example, there are vivid descriptions of the crowds gathering in the amusement areas to watch other visitors' bodily performance in their interaction with the various attractions. In the 1909 Stockholm exhibition, the interest in the movement of bodies in joyrides and a nearby open-air dance hall motivated descriptions of the area as an open stage where everyone's eyes were in constant motion. According to unanimous reports in contemporary newspapers and the official description of the exhibition, the area attracted large audiences that watched the dance "with a controlling gaze" and enjoyed having their eyes "rushing down" the water slide or "gliding down the spiral tower."[4] A whole language developed around the intensified visual exchange

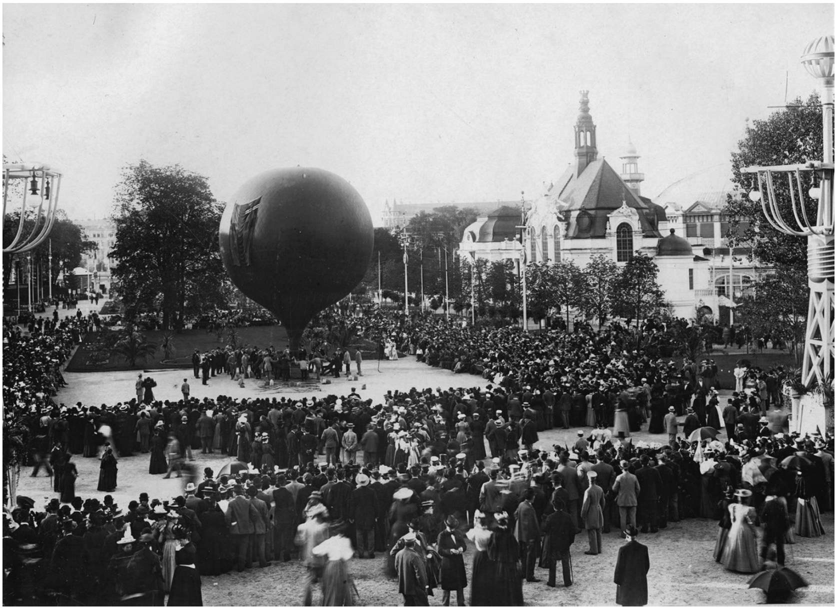

Figure I.1.3 Balloon ascent with photographer Oscar Halldin from the open ground in front of the Industrial Hall at the Stockholm Exhibition of 1897. Photograph the National Museum of Science and Technology, Stockholm/Wikimedia Commons.

and modes of seeing that these gathering places, and the exhibition in general, enabled. Old and new media played a creative role in the affluence of visual metaphors. A *camera obscura*, an item of media nostalgia for the experienced visitors, was marketed as an observatory, a tool for watching without being watched: "In Camera Obscura you will see the whole 'white city' and its moving crowds in natural colours and all its details. You can recognise your friends, walking around and looking at the exhibition, you can watch all their movements without them having any sense of being observed."[5]

And yet, it must be emphasised that the sensorial registers that these exhibitions entailed were far from limited to visual interactions and distanced spectatorship. Numerous displays, amusements and architectural structures engaged the visitors in embodied and self-reflexive comparisons and shifts of perspective. Scaling techniques were key to exhibitionary media. The mixed nature of the exhibition as a mass medium and a collective performance alternately positioned the visitors in front of and inside the displays. Thus, these places were constituted by mobile audiences rather than static and spectating crowds. At the 1909 Stockholm exhibition, the attractions in the amusement area curiously reflected this liminal state of the exhibition visitor as both onlooker and performer. Memorable sites such as the rotating coffee shop; the open-air dancing floor; and the funhouse, with a fully furnished room turned upside down and a mirror hall; shared the tendency of having the visitors experience fleeting views, shifts of bodily proportions and dizziness in front of each other (Ekström, 2010, pp. 192–207). It was all in tune with the overall theatricality and performative address that characterised these exhibitions.

Media sociality

Publics and public spaces are mediated in myriads of ways. In approaching 19th- and early 20th-century exhibitions as media space, it is therefore necessary to make some distinctions. What is at stake in this chapter is not how exhibition visitors were interpellated as audiences and publics on a representational level. The "content" of world's fairs and exhibitions has often been identified with the collective identities and imagined communities (Anderson, 1983/2006) that were envisioned in the official rhetorics of the events. But here the focus is on the visitors' material encounter with exhibitionary spaces, their ways of moving in and out of the displays, and the interactions that developed in this particular context. This rather calls for what might be referred to as a media-historical microsociology of exhibitionary spaces and the participatory practices that they entailed, an approach that is essentially different from but not necessarily incompatible with the tradition of representational critique that developed in museum and cultural studies in the late 20th century.

When seen from this perspective, the genre of international exhibitions from the mid-19th century onwards fostered forms of public sociality that were embedded in a historically specific media culture. As exemplified, this media sociality was characterised by and became visible in exhibitionary spaces through the commodification of media production, the proliferation of intermedial practices, and the emergence of informal and conversational modes of knowledge of old and new media technologies. It also surfaced in the visitors' participatory immersion into the exhibitions and their emerging roles as audience performers in the display of media production. Physically engaging with, talking about and watching others explore various media and communication technologies defined the inside of the medium of exhibitions itself (Figure I.1.4).

The exhibitions were thus living spaces that changed from day to day, constituted and reshaped by the movements and interactions of the visitors in their encounter with a multitude of individual displays. As such, they prefigured the formation of a particular kind of media sociality. This form of sociality was not defined by social interaction itself becoming increasingly

Figure I.1.4 The moving walkway with platforms moving at different speeds at the Paris Exhibition of 1900. Photograph Wikimedia Commons.

mediated, which is an interpretation of the cumulative role of media in modern societies that is sometimes referred to as "mediatisation theory" and that resonates with the discourse of the "fall of publics" that social theorists such as Jürgen Habermas (1991) and Richard Sennett (1977) developed in the 1960s and 1970s. Neither did it comply with the classical idea of the increasing passivity of audience positions in modernity. To the contrary, what characterised the exhibitions as public spaces in their relation to various media was an increasing orientation towards activities that turned media culture and media production itself into a centre of public interaction. Key to this form of sociality was the conversational ways of knowing media that the exhibitions and their gathering places encouraged.

Several scholars have contributed to an enriched understanding of the skills and literacies that 19th- and early 20th-century audiences developed between them in relation to a broad range of popular visual and media culture. For example, the work by Vanessa Schwartz (1998), Mark Sandberg (2003), Peter Bailey (1998), Ben Singer (2001) and Gerry Beegan (2008) on French, Scandinavian and Anglo-American sources respectively, shows how stories and events circulated between news, panoramas, wax museums, theatres and film screens and were told in ways that presupposed that the audiences held certain knowledge about their appearance in other contexts. This was a culture of intermediality and deliberate remediation that crossed high and low genres as much as visual, text-based and theatrical media, and that drew together and built on media practices from different times and places (Ekström, 2016). Beegan (2008, p. 22) and others argue that this knowledge was shaped to a large extent through the conversations of the audiences, and that this informal form of talk constituted and held together in other respects heterogeneous audiences. It was a mode of conversational knowledge that might be thought of in terms of "media talk" (Ekström, 2010, pp. 233–235).

This analysis feeds into broader discussions of the different public spheres that new and emerging spaces for media consumption enabled around the turn of the 20th century (see, for example, Hansen, 1991). It also provides an opening for thinking historically about how the use of and physical interaction with different media choreographs contemporary public spaces.

The point that has been stressed in this chapter, and that goes beyond much previous work on 19th- and 20th-century exhibitions and media culture, is that the form of media sociality that the exhibitions highlighted was not limited to the conversation and comparison of media messages and content. The experience of moving through exhibitionary spaces comprised a much broader spectrum of engagement with technologies, modes of production and intermedial practices, fostering an understanding of how different media literally grew out of each other. This was, in other words, a form of media sociality that was heavily shaped by the materiality of media in exhibitionary spaces and, most importantly, the immersive and participatory nature of the medium of exhibition itself.

Exhibitionary media and museums

Exhibition studies are only beginning to explore the history of international exhibitions from a media-historical perspective. But how does such an approach contribute to the understanding of the historical relation between exhibitionary media and the modern museum? By way of conclusion, I would like to point to four aspects of this relationship as particularly noteworthy and providing possible guidelines for future research.

First, it should be emphasised that modern techniques of display developed in relation to a broad spectrum of public exhibition and largely independently of the institutional history of museums. It is only in the late 19th-century that the development of the medium of exhibition, on the one hand, and the institutional history of the modern museum, on the other, become substantially intertwined (cf. Heesen, 2012). What Bennett's work on "the birth of the museum" (1995) refers to as the exhibitionary complex – and what this chapter has been expanding into a media complex – is therefore not only a matter of context but of genealogy.

Second, there are too many historical interdependencies and cross-fertilisations to take for granted the demarcation between popular visual and media culture, on the one hand, and educative and scientific values in museums, on the other. Indeed, the relation between spectacular attraction and serious instruction in exhibitions was a theme of intense debate around the turn of the 20th century. It was part of the boundary work characteristic to emerging knowledge institutions (Gieryn, 1983) and reflected the pursuit of professional status in museums as well as in emerging entertainment industries. However, exhibitionary practices in museums continued to be developed in relation to other contexts for public exhibition throughout the 20th-century. Among other things, this included the aesthetics of display and various participatory practices, especially in institutions that combined characteristics of temporary exhibitions, fairs and conventional museum space, for example the early open-air museums (Sandberg, 2003).

Third, the exchange between museum practices and media culture in the 19th and 20th centuries was not limited to the culture of display. It also involved the extended use of what might be described as backstage media in the museum context. In the early 20th-century, a number of technologies that once appeared as objects of display at the great exhibitions – photographic techniques, film, X-ray imaging and phonographic sound recording – entered museums not as props or exhibitionary media but as tools for documenting, collecting, sorting and archiving objects and ethnographic data (Boström, 2006). These and many other related apparatuses came to define the institutional knowledge production in the modern museum as much as they influenced practices of display. This is an aspect of the history of the museum as media space that remains fairly unexplored.

Fourth, as with many responses to the digital turn, there is in contemporary museum policies a tendency to overstate the gap between old and new media in the museum context. As this chapter has demonstrated, exhibitionary media developed in close relation to a wide array of cross-media practices in the 19th- and early 20th-century. This involved, among other aspects, different modes of audience participation, the commodification of media production, and the emergence of forms of public sociality that were shaped by the material interaction with various media. In this final respect, the history of exhibitions thus provides material for a historical approach to a series of theoretical and political issues that are often obscured as being media-specific and new.

Notes

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1 In media studies more generally there have been many calls in the last decade for "a much longer historical time frame" (Hay & Couldry, 2011, p. 482) in discussions of analytical themes such as media convergence and audience participation (see also Couldry, 2011, pp. 518, 522). As much as I agree with this, it is important that such a historical critique looks further away than TV studies.

2 "Anmälan," *Expositions-Tidningen* 1866, March 17, No. 0; "Tekniskt," *Expositions-Tidningen* 1866, March 17, No. 0; "Till Expositionstidningens prenumeranter," *Expositions-Tidningen* 1866, July 7, No 30.

3 Quotes in the author's translation. For references to the quotes in original, see Ekström, 2010, pp. 198–200. I deal with these statistical displays at length in Ekström, 2008.

4 Quotes in the author's translation. For references to the quotes in original, see Ekström, 2010, pp. 194–196.

5 Quote in the author's translation from an advertisement in the 1909 exhibition journal [*Nyheterna från Konst-industriutställningen*]. For a reference to the quote in original, see Ekström, 2010, p. 196. Similar to the Chicago World's Fair in 1893, the main exhibition area in Stockholm in 1909 was known as The White City.

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I.2

The museum as media producer

Innovation before the digital age

Peter Pavement

In the museum sector, it is not uncommon to hear a lament on how far "behind" institutions are with their use of media technologies. This refrain among museum professionals (Steele, 2013; Ansty, 2016) is reinforced by sector reports that have focussed on a "gap" in provision (Council of Canadian Academies, 2015; NESTA, 2013). Other discourses exhort museum professionals to grasp the "new" and the "future" (London School of Economics, 2009; American Alliance of Museums, 2013–2016). However, these statements belie the long history of museum media production that began nearly as long ago as museums did themselves. It is a rich history of collaboration with industry and media organisations, paving the way for numerous innovations and reinterpretations of museum "content." This chapter explores early museum media through a survey of notable museum media experiments and productions drawn from institutions such as the American Museum for Natural History in New York, Stedelijk Museum in Amsterdam, Deutsches Museum in Munich and the University of Cambridge's Museum of Archaeology and Anthropology. These examples, albeit sited at large, research-intensive institutions, demonstrate that (perhaps in contrast to commonplace misapprehensions that still echo in the sector) museum professionals in actuality have often been very keen to adopt new media technologies as soon as they become available, and even have helped to develop entirely new technologies in order to serve particular communication objectives of their museum. The chapter concludes with a discussion of the bi-directional impact of collaboration with commercial partners and the manner in which museums fulfil or extend their missions through the adoption of novel media forms and formats.

The adoption and development of media technologies

Although not a new media technology by the time museums were publishing, the 18th and 19th centuries saw the costs of book production continue to fall, alongside technological developments that made it easier and faster to produce books. Paper production and typesetting became mechanised, and cloth binding replaced leather (Hughes, 2010; Stevenson, 2010). Museums took advantage of these developments and began to establish publishing operations, some even commencing publication as soon as they opened, such as the Natural History Museum's (NHM, n.d.) publishing house in 1881.

Early museum publications centred on the collection catalogue, producing books that perhaps served as the only way interested persons could find out what a museum actually held. In-gallery labels could be hard to read, cryptic and sometimes absent altogether (Haskell, 2000), so catalogues acted as gallery guides for museum visitors. As the collections expanded, so the publications became more varied and specialised, even if they were still essentially catalogues. For example, the British Museum published *Catalogue of hispidae in the collection of the British Museum* by Joseph S. Baly in 1858 to document this one particular form of insect (British Library Catalogue). Writing about these catalogues in the context of art museums, Giles Waterfield classified the publications into "inventory catalogue" – giving the location, artist, title and other simple data about a work, "expository guide" – an enhanced version of the inventory catalogue that also included commentary and was produced in a format portable enough for use in-gallery, and "presentation volume" – a prestigious illustrated edition to act as a "museum on paper" – often used as gifts to visiting dignitaries (Waterfield, 1995) (Figure I.2.1).

Patents for motion-picture cameras began to be granted in the late 1880s and early 1890s, and by the end of the century, cameras were being put to work in the field by anthropologists. Most famously, the availability of cameras (both motion and still), along with wax-cylinder recorders, meant that Alfred Cort Haddon and his colleagues were able to capture images and recordings of music, dance and life in general during the Torres Strait Expedition of 1898. Haddon brought back the expedition's artefacts and recordings to what is now the University of Cambridge's Museum of Archaeology and Anthropology (see, for example, Herle & Rouse, 1998). The approximately 300 photographs, phonographic cylinders and

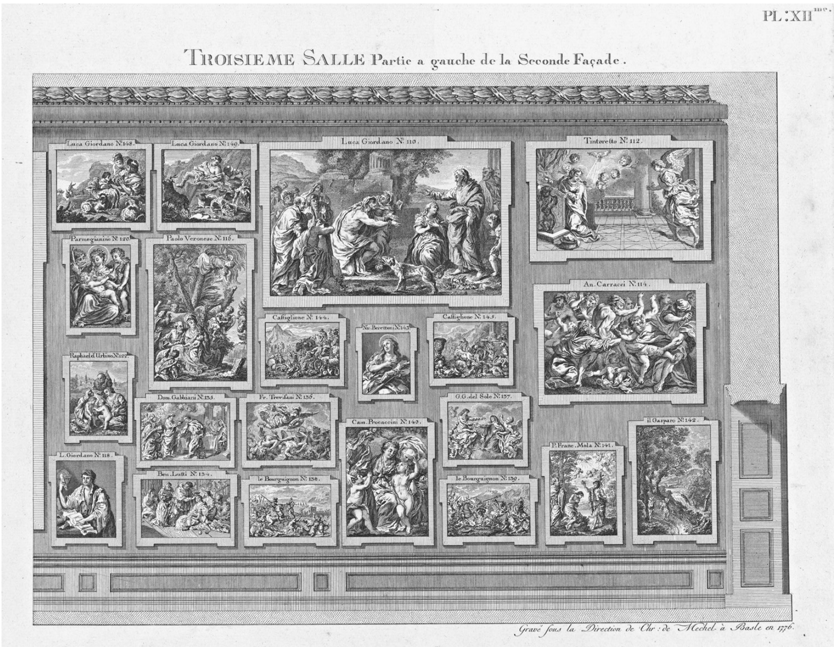

Figure I.2.1 From a "presentation volume" – third room, second facade of the Düsseldorf Gallery. Printer's proof of Nicolas de Pigage and Christian von Mechel, *La galerie électorale de Dusseldorff, 1788.* Getty Research Institute, image 870670, 2010.

four minutes of film (Edwards, 1997) were captured by Haddon as a means to *record* a disappearing way of life:

> It is our bounden duty to record the physical characteristics, the handicrafts, the psychology, ceremonial observances and religious beliefs of vanishing peoples; this also is a work which in many cases can alone be accomplished by the present generation. … The history of these things once gone can never be recovered. (Haddon, 1897, p. 306)

The media produced is a good example of photography, phonography and film being used as a recording tool in the field by academic researchers, but its significance to museology is the manner in which the media products became as much part of a museum collection as the ethnographic artefacts that had been brought back from the expedition. Following his return, Haddon himself assisted the presentation of exhibits about the Torres Straits Islanders at a multitude of venues, including the British Museum, Glasgow City Museum and Gallery and the Horniman Museum in London, but a century later an exhibition could be presented from the University of Cambridge's Museum of Archaeology and Anthropology collection, which made use of Haddon's media as being representative of the Torres Straits cultures on equal terms as the islanders' artefacts that had been brought back to the United Kingdom (Herle, 2001).

By the turn of the twentieth century, audio recording and playback technology, often going by brand names such as Gramophone, Phonograph or Victrola, was becoming more widespread, attracting the attention (and enthusiasm) of museum practitioners:

> Prof. Anton Fritsch, of Prague, has playfully suggested that the day may come when a visitor, standing in front of some interesting specimen, will have simply to drop a coin into a slot connected with a phonograph, and forthwith he will hear a short discourse on the specimen in the very words, nay, even the very voice, of some distinguished professor. … We already have in the Essex Museum, for the use of the public, a microscope and a spinthariscope. Why not a phonograph? F. W. Rudler, Essex Field Club in 1905. (Fritsch, 1904)

Fritsch's exhortation to embrace technology in order to bring the curatorial voice into the gallery came soon after European museum curators convened for the Mannheim Conference on "Museums as places for popular culture," that was held in 1903 and had been reported on in that year's *Museums Journal* (1903). The very title of the conference indicates that museums were significantly shifting positions, reorienting themselves around the needs of the visitor and seeking to enhance exhibits with the tools available.

In 1908 the American Museum of Natural History (AMNH) put Fritsch's proposal into practice, making use of gramophones to provide commentary as part of its international exhibition about tuberculosis. The exhibition was very successful; an example of the museum as a place of popular culture as per the Mannheim Conference. The show attracted more than 750,000 visitors over the course of a seven-week run, the highest attendance any exhibition at the AMNH had ever attracted (Brown, 2014). A contemporary review stated: "at every stopping-place a talking machine delivered short lectures of warning and advice" (AMNH, 1908; Griffiths, 2008). Meanwhile, audio and visual material became further embedded as part of collecting practice, as recording of music became easier and as cinema and film-making began to be recognised as an art form in itself. For example, in 1907 the Paris Opera House founded what they termed a "Museum of Phonograph Records" to preserve a collection of recordings of singers of the day. This was, in fact, more of a "time capsule" with storage facilities designed to preserve the records for as long as possible, rather than any attempt to engage with the public or academia (Walsh, 2008).

Museums were also commissioning their own films as the twentieth century gathered pace; the American Museum of Natural History produced its first film in 1912 – a recording of an expedition, by assistant curator Roy Chapman Andrews on a Korean whaling vessel, to collect specimens of whales. Building on the practice established by the Torres Straits expedition, the museum was funding the use of media as a recording function for expeditions that were part of its research activities. Concurrently, film had come to the attention of the education department of the institution. The museum established a film library of its own in 1914 and donated reels, and from 1922 the library was permitted to lend out films off-site to schools. Having developed the production capabilities to document its research work in the field via film, the museum also began to produce movies for entertainment purposes, including *Simba*, the 1928 film by husband-and-wife team Martin and Osa Johnson, which was able to go beyond the walls of the institution as it enjoyed a theatrical release. Another New York institution, the Museum of Modern Art, also established a film library in 1935, which eventually became MoMA's Department of Film. Within four years of its establishment, the library was admitting audiences of 500 people to its screenings (MOMA, n.d.).

Through these developments, curators progressed from using film as a recording device on expeditions, or as a resource for exhibition in a theatre setting, to using film as a method of enhancing interpretation in the gallery. However, this raised a technical issue – the physical demands of running the same film on a constant loop for many hours a day meant that gallery designers had to develop techniques to make the film itself more robust and reliable.

The AMNH's response was to install "The Dramagraph," consisting of a metal box with a screen aperture at the top of one side (Figure I.2.2). Within the box, a projector ran film

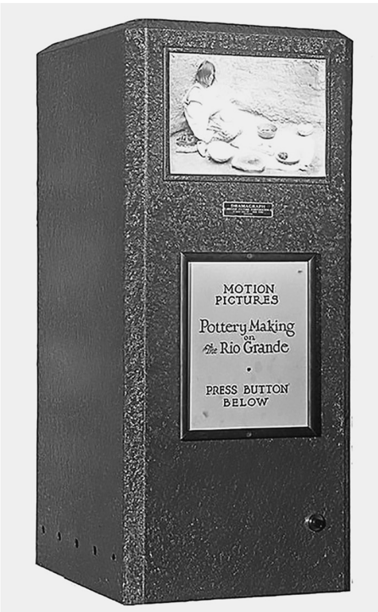

Figure I.2.2 1930s "Dramagraph" film display unit from the American Museum of Natural History. Photograph American Museum of Natural History Library, image 313366, n.d.

that had been mounted onto steel tape to prevent the projector's cogs wearing through the sprockets in the celluloid filmstrip. In the AMNH's photograph archive is an image showing the Dramagraph that was used in the North American Indian Hall to show field footage of "Pottery making on the Rio Grande." We know from an article in the *Museums Journal* in 1931 that the Dramagraph was also used in the Science Museum in London in the 1930s (Griffiths, 2008).

These examples help to illustrate how museums have been keen adopters of novel media technologies, finding ways to make use of new apparatus and media formats in the pursuit of their activities – be that the recording of research material (Haddon's use of film, photography and phonography at Cambridge), the preservation of media as a cultural artefact (Paris Opera House) or the presentation of interpretation to their visitors and other audiences (AMNH). However, as well as being *consumers* of media technologies, museums have also been active participants in the development of innovations in media technology. For example, the planetarium at the Deutsches Museum was one such museum-based research and development success. In 1913, astronomer Max Wolf persuaded Deutsches Museum Director General Oskar von Miller to commission the optical-equipment manufacturer Carl Zeiss to create the technical apparatus for a planetarium. Prior to the commission, the plan was for a "walk-in perforated plate sphere with holes representing the stars and illuminated from the outside," (Deutsches Museum, n.d.a) but a shift in ideas led the originators to consider the use of projection from the inside (Figure I.2.3). Projection was a media technology familiar through a rich tradition from magic lantern slides through to early cinema, but the planetarium would require a new mechanism, featuring multiple lenses, capable of projecting astronomical features individually, timed to a presentation programme. Interrupted by the First World War, the planetarium was not completed until 1923 (Deutsches Museum, n.d.a).

A key element of the planetarium concept was the requirement for a particular kind of venue, a dome, that when its interior was darkened and projected upon, would create a simulation of the night sky. Incidentally, the Munich development also demonstrated innovation through structure of the dome itself – a geodesic frame was constructed, preceding R. Buckminster Fuller's popularisation of the form by several decades (Buckminster Fuller Institute, n.d.). Part theatre, part cinema and always educational, the planetarium created a

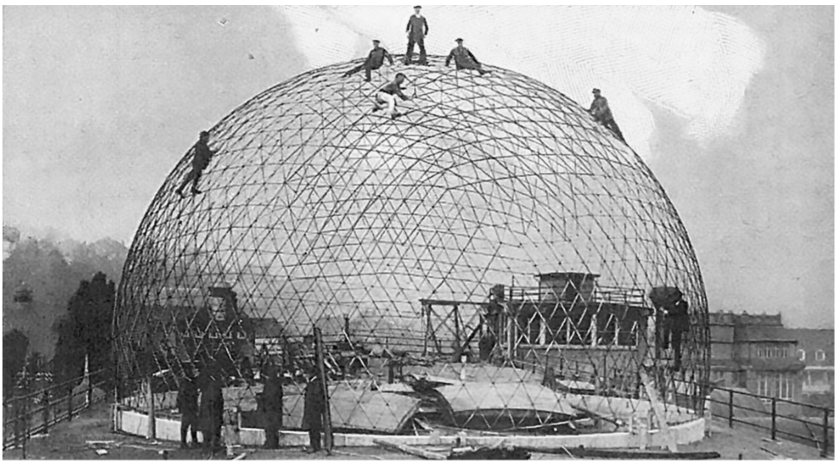

Figure I.2.3 Building an experimental dome at the Carl Zeiss factory. Photograph *Popular Mechanics*, 1929.

space within a space. It was a short step to realise that a planetarium could operate independently of its museum parent, and by 1930 installations had opened in Rome, Moscow, Stockholm, Milan, Hamburg, Vienna and Chicago (Engber, 2014). Technology partner Carl Zeiss also went on to market their projectors to these and other emerging venues with great success and, since then, "Zeiss Projector" (Figure I.2.4) has become a generic term for the machine at the core of a planetarium, even when not manufactured by Carl Zeiss itself (Chartrand, 1973).

Today one of the most pervasive forms of media used for interpretation within museum galleries is the audio guide. This has its roots in an early 1950s experiment by the Stedelijk Museum in the Netherlands. The Dutch electronics giant Philips helped to develop the technology, which in this case used a technique much like an induction loop to broadcast the output of a centralised tape recorder to listening devices carried by museum visitors. The devices essentially functioned as radio receivers, with a single programme broadcast (in Dutch, French, English and German) to all listening visitors at the same time, no doubt causing bottlenecks in the galleries as people tried to view the described item simultaneously (Tallon, 2009) (Figure I.2.5).

In 1954, the ever-pioneering American Museum of Natural History introduced its "Guide-a-Phone" (Figure I.2.6). From that point on, the audio guide increasingly became an established part of (at least major) museum exhibition practice. In 1957, the medium became a service offered by the private sector, with the founding of Acoustiguide, which was launched with a tour of Hyde Park, the home of President Franklin D. Roosevelt (Acoustiguide, n.d.).

In the 1920s and 1930s, museums had been invited to present lectures on broadcast radio stations, one example being the Brooklyn Museum's Curator in Chief, Daniel M. Fox, who was being heard on WNYC public radio from 1922 (Brooklyn Museum Archives, n.d.). The focal point for both the broadcaster and the museum in this programming seems to have been education. Broadcaster CBS (Columbia Broadcasting System) became an outlet for lectures by the American Museum of Natural History, under the programming strand "the American

Figure I.2.4 Zeiss Mark 1 Projector the Zeiss planetarium installed at the Deutsches Museum. Photograph Deutsches Museum, 1925.

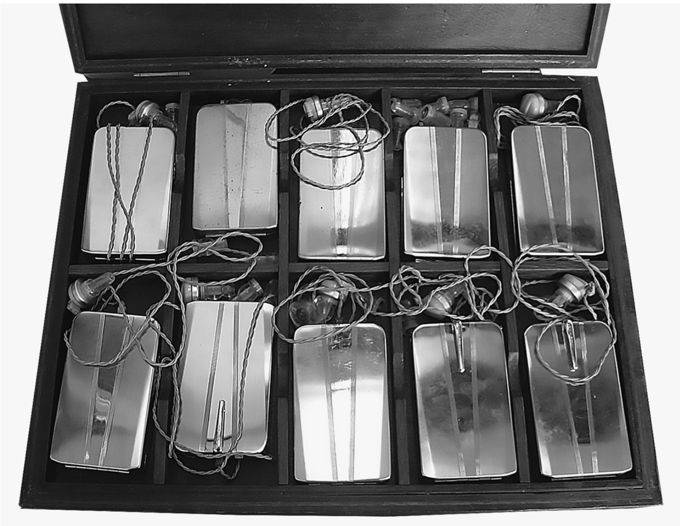

Figure I.2.5 A case of audio receivers used at the Stedelijk Museum, Amsterdam. Photograph Tallon, 2009.

Figure I.2.6 The 1954 Guide-a-Phone from the American Museum of Natural History. Photograph American Museum of Natural History Library, image 323699, n.d.

school of the air." In the *Movie and Radio Guide* listings magazine from the 1940s, a listener breathlessly recounts:

> One day young Ken stayed home from school with a bad cold. That bad cold turned out to be the luckiest bit of misfortune that ever happened to me. I bundled him up on the living-room couch, turned on the radio and went out to market. When I came back, I found young Ken listening, fascinated. I sat down and listened, too. What I heard was a vivid and dramatic description of exploration in the Gobi Desert. The speaker, Dr. Roy Chapman

> Andrews of the American Museum of Natural History of New York, was recounting one of his fossil-hunting expeditions. I found myself hanging on his words, holding my breath as he described the dangers and thrills of the trip, sighing with relief as the caravan arrived at its destination. When he stopped speaking it was announced that this was part of the American School of the Air course, heard daily except Saturdays and Sundays over the Columbia Broadcasting System. (Badger, 1941)

The big mass-media development in the United States during the two decades following the Second World War was television, and by 1955, 64.5% of United States households had a television, up from just 9% only five years before (Television Bureau of Advertising, 2012). Even in this mass-broadcasting context, where the financial barriers to entry were high, museums were also present and helping to drive innovation – as well as providing content and expertise in partnership with industry players. Most notably, the University of Pennsylvania Museum of Archaeology and Anthropology teamed up with CBS to produce the panel show *What in the World?*, which ran from 1951 to 1965. The museum's own account of the series reads:

> By the early 1960s it was one of the oldest programs on television, bringing positive reviews and a steady stream of fan mail to the Museum that continues to this day. On each What in the World? program, four or five unidentified objects were presented to a panel of experts who were asked to guess what each piece was, where it came from, how old it was, and how it was used. Objects were selected from storerooms and had never before been seen by the panel. Before the experts guessed, the audience was told what the object was, and, during the course of the program, could watch the thought processes of real – and often fallible! – anthropologists and archaeologists. After they had completed their identification, the moderator, Froelich Rainey, Director of the Museum, told them whether they were right and if not, gave the correct identification. Only four episodes of the show survive. The special guest on one of these was the famous actor (and collector) Vincent Price. (Penn Museum, n.d.a)

Figure I.2.7 Jacque Lipschitz, Carleton Coon and Vincent Price on *What in the World?* Photograph Penn Museum/CBS, 1955.

Despite the rarefied nature of the programme's subject matter when compared to other TV quiz shows aired in the United States at the time, *What in the World?* was popular enough to be shown at prime time. In his obituary for the show's moderator, Froelich Rainey, John Bockstoce expressed amazement that "a small group of experts could have been even remotely interesting as they sat stiffly under severe studio lights discussing the provenance of obscure artefacts, yet for a vast amount of people they *were* fascinating" (see Bockstoce, 1993, p. 89). *What in the World?* was one of the first media productions to provide viewers with access to people "backstage" at the museum; something that later expanded into a distinct television format (see, for example, the BBC's [British Broadcasting Corporation] 2010 productions *Museum of Life* and *Behind the Scenes at the Museum*) that tapped into audiences' curiosity for how cultural productions are made.

The United Kingdom television audience was also growing in the same decade; in March 1953, slightly over 2 million television licenses were issued; by 1959 the figure had risen to 10 million, 59% of all households (British Film Institute [BFI], n.d.; British Audience Research Board [BARB], n.d.). The television "format" of the *What in the World?* was borrowed by the BBC in 1952, becoming the series *Animal, Vegetable or Mineral?* (Attenborough, 2009), with Mortimer Wheeler at the helm. Wheeler was an archaeologist of some repute and founder of Institute of Archaeology in London. He had been director of the National Museum of Wales, the London Museum (later to become the Museum of London) and Director-General of the Archaeological Survey of India (Piggott, 1977).

A staff member of the production team was David Attenborough, later to become the United Kingdom's most recognised naturalist and broadcaster. As part of his role, his job was to travel to British museums to fetch objects to be featured on *Animal, Vegetable or Mineral?*, finding "it would turn out, of course, that he himself had actually excavated it and that he knew it backwards" (Attenborough, 2009). Attenborough was able to witness first-hand the surprising impact of television exposure of an "educational" topic, when packaged in the right format:

> Animal, Vegetable or Mineral? went from success to success. It may come as a surprise to many here that in 1956 Sir Mortimer – an archaeologist not a pop singer – became Television Personality of the Year. And he deserved it. Librarians around the country told us that shelves on which archaeological books had sat untouched for decades were suddenly emptied. Archaeology had become a huge popular success. It was of interest to anyone with any degree of intellectual curiosity. It was a sensation. (Attenborough, 2009, p. 7)

The United States and United Kingdom programmes even came together to host a joint show in 1955, with panellists from both shows examining the same objects, on both sides of the Atlantic. Much more recently, in 2015, the format has revived and updated into the BBC Four series Quizeum (BBC, n.d.).

In the second half of the 20th century, developments in digital computer technology increased in momentum. There are examples that demonstrate how many museums were keen to experiment with these technologies to help mediate their own messages and content. One such example is a computer-based exhibit at the Evoluon, Eindhoven, that was installed in 1970. Named the Senster, this was a four metres tall robotic sculpture that was displayed in a prominent position in the flying saucer-shaped museum. The Evoluon itself was a science museum that opened in 1966, conceived of by Frits Philips as a permanent celebration of the 75th anniversary of the electronics company Philips (evoluon.org, n.d.). The exhibition design for the entire museum was contracted to British designer James Gardner. For the entrance area of the museum, Gardner commissioned a cybernetic sculpture from artist Edward Ihnatowicz, after Gardner had seen an earlier piece, SAM – Sound Activated Mobile – at the ICA (Institute of Contemporary Art) in London. Resembling a flower set upon a metal spine, SAM used microphones and electronic circuits to react to visitors to the exhibition and follow their movements as they proceeded through the gallery space. Made of steel and aluminium, the Senster expanded the SAM concept to a much larger scale and looked somewhat like a cross between an electricity pylon and a giraffe. It was fitted with microphones and a Doppler movement radar and would swing its "head" and "neck" around to the source of noise or movement in the room. A Philips P9201 (a rebranded Honeywell) computer was employed to interpret the input signals coming from the sensors and modify the movement of the sculpture accordingly. This digitally mediated feedback loop made the Senster appear to behave like a living creature, reacting to its environment and museum visitors, thus demonstrating the connection between sense and response found in the natural world (Gardner, 1993) (Figure I.2.8).

Working with collaborators

To realise the projects described in these examples, museums had to engage with companies involved in media production. Some of this engagement was purely by purchasing equipment and material that was already available, but many of these examples required a far greater degree of collaboration. The Deutsches Museum Planetarium involved Carl Zeiss in such a degree of research and development that the company actually built a mock-up dome on the roof of its factory between 1919 and 1923 in order to test their projector designs (Deutsches Museum, n.d.a). Exhibition designer James Gardner commissioned artist Edward Ihnatowicz to create the Senster for electronics giant Philip's new Evoluon museum. Ihnatowicz taught himself how to programme the wardrobe-sized computer provided by Philips, but in the end their engineers had to help him in order to master the complex relationships between the Senster's sensors and

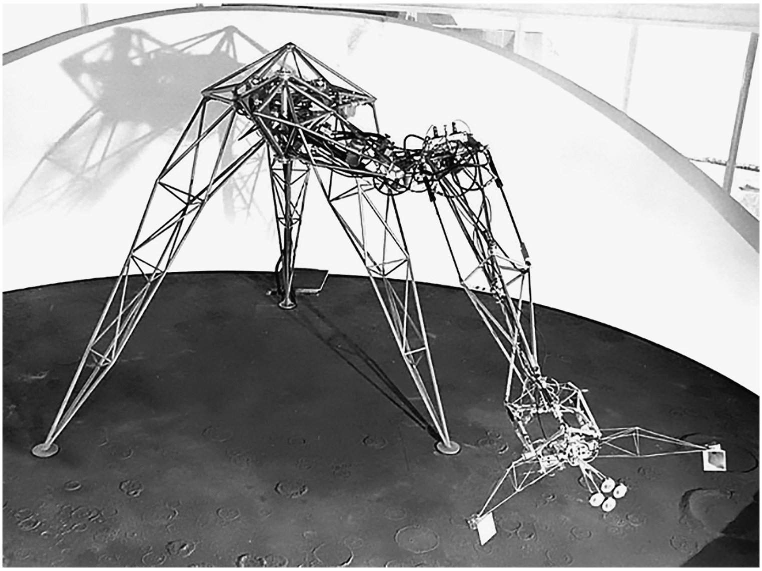

Figure I.2.8 The Senster on its base at the Evoluon Museum. Photograph Philips Archive, 1970.

its movements (Gardner, 1993). The Penn museum became an integral part of a CBS studio production, as *What in the World?* was broadcast over 14 years.

Innovations such as the planetarium or the audio guide became something that could be further exploited outside of the direct relationship between client museum and supplier company. The Carl Zeiss projector became the foundation of hundreds of planetaria worldwide. The 1950s development of the tape-based audio guide at AMNH was followed swiftly by the founding of Acoustiguide in 1957 – a company that has sustained until the present day, providing audio guides for a huge range of museums and other venues around the world (Acoustiguide, n.d.).

Just as companies see products, techniques and methods that can "spin out" from museum-based media activities, they also can begin to see the museum as a market in itself. Ideas, information, proposals and pitches travel back and forth between museum and potential suppliers as relationships become established and formalised. This interplay can be charted through the evolution of the gallery space itself. In the photographs of gallery spaces below (Figure I.2.9), starting with the "classic" arrangement of cases and objects at the Ashmolean Museum in Oxford, United Kingdom, in 1910 (top left), we can see the colonisation of the space by design and media technologies. The 1950 AMNH gallery (top right) is presented as an interior architectural composition, while the Brooklyn Museum in 1971 (centre left) shows how reproduction technology (typesetting and large format printing) are used to communicate

Figure I.2.9 A series of images showing the incorporation of design and media technology into museum galleries over time. Photographs (clockwise from top left): Ashmolean Museum, 1910; American Museum of Natural History Library, image 00325921, 1950; National Maritime Museum, 2000; Trustees of the British Museum, 2014; Australian Natural History Museum, 2010; Brooklyn Museum, 1971.

interpretation without reference to objects at all. Large formatting printing is perhaps a little-recognised media technology, but its use in gallery spaces has become widespread and often a bold part of the overall presentation, as demonstrated by this example from the United Kingdom's National Maritime Museum in 2000 (centre right). Finally, the museum gallery has become a locus for more and more screen-based and projection-based presentations, here illustrated by "touch tables" being used at the National Museum of Australia in Canberra (bottom left) and the seascape projected into "Vikings: life and legend" exhibition held at the British Museum in 2014 (bottom right).

In summary, by choosing to utilise media, museums have had an influence on the shape of several media technologies and the activities of many of its commercial providers. However, this is a two-way process, and media technology has shaped the museum in a multitude of ways in return. The innovation process of media experimentation and development is a process of knowledge exchange between museum and supplier, but as technologies and practices become embedded and novel media forms and formats normalised, the museum sector has emerged as a distinct "market" for commercial firms, including formal processes for marketing and sales such as suppliers guides, trade shows and tendering of contracts (Museums Association, n.d.; American Alliance of Museums, n.d.).

Motivations for media innovation by museums

Why do museums go to the trouble of producing these media outputs? To do so involves considerable effort on the part of museum staff – agreements with colleagues, managers and stakeholders must be secured, outside collaborators or suppliers recruited and briefed and above all, a new media technology mastered and its limitations and/or failures managed. To get to grips with a medium involves the learning of both the format and the form – these terms are often used interchangeably in common parlance, but here we mean "form" to be the style and approach to content that will be delivered through a medium, and "format" to be the container that is used for that delivery. The form of the American Museum of Natural History's Dramagraph film was a documentary field recording of pottery making by Native American peoples; the format was a 16mm celluloid film, mounted onto steel tape for longevity (Griffiths, 2008). The form of the *What in the World?* series drew cues from quiz shows but found ways to introduce both scholarship and celebrity into the presentation; its format was a half hour television broadcast on the CBS network (Penn Museum, n.d.a). Sometimes the form and format had to be developed from scratch – the planetarium form was developed into a series of scenes of the night sky, narrated by an expert in astronomy and delivered to a static, seated audience; its format was projection of images into a custom-made dome construction.

Museums do not come to questions of form and format without experience, for almost all museums are highly focussed on their own intrinsic form, the exhibition, and format, the gallery space. A gallery exhibition is presented to the public having been through a process of conceptualisation, design, selection, construction and content creation, all with an audience in mind – it can be argued that in essence it is a form of medium itself (e.g. Kaplan, 2005). It is by creating exhibitions that much of the museum's experience of media production is acquired and developed. However, like all media, there are limitations to the gallery exhibition that constrain presentation, so museums have been motivated to adopt other types of media as they have arisen, to try to ameliorate those limitations. Although they have to learn, or even develop, the form and formats of each new medium that they try, their experience in producing interpretation in a form that suits their primary format is transferrable and reduces barriers to entry. Reviewing the historical examples in this chapter, we can see that the projects fall into the following groupings.

1 Extending gallery interpretation

Early museum galleries contained a lot less visible interpretation than those contemporary to us. Labelling was minimal, sometimes non-existent, and was often restricted to hand-written labels attached to objects. In time, written curatorial interpretation found its way into the gallery space in the form of extended captions, wall panels and large format graphics, but again, the finite space of the gallery means that these must be limited in quantity. Additionally, a gallery full of information becomes overwhelming for the visitor. Incorporating different media extends the ability of the gallery to deliver interpretation without using every available space for text.

Several of the examples explored above attempt to provide more interpretation in a finite space. For example, the gramophones used in the American Museum of Natural History (AMNH) International Tuberculosis Exhibition in 1908 and 1909 gave visitors access to hundreds of words by curators and experts, but only gave up the gallery space equivalent to a record player. The development of the audio guide, starting with the Stedelijk Museum's 1952 experiments with radio transmission and the AMNH's Guide-a-Phone audio tape player, greatly expanded the amount of interpretation that could be presented to the visitor, without any spatial cost at all. Since then, audio guides have become a fixture in many museums and visitor attractions, supporting an industry of suppliers and generating income for many venues.

Some media types allowed interpretation to be extended in both depth and time – for example, the Dramagraph-based film at the AMNH connected the artefacts on display with footage of Native Americans making similar objects to those in the gallery. By observing the actions rendered in the Dramagraph's moving pictures, visitors could see how people moved and manipulated tools or materials in the production of pottery – and their understanding of the artefacts enhanced.

2 Preserving content beyond the life of an exhibition

Many exhibitions are temporary but impart to the museum great prestige and many opportunities to engage with their audiences, sponsors and other stakeholders. Capturing an exhibit into a media format preserves the content, even if the form must mutate somewhat during "capture." More significantly, turning an exhibit into a media product also helps to extend the benefits to the museum for a longer time span. Publishing, from princely volume to the coffee table book, has been a key point of alternative dissemination of exhibit content, coupled with the accrual of status and (sometimes) income from sales. More recent methods of lifespan extension include DVDs, "online exhibitions" and dedicated apps.

3 Developing tools for education

A highly creative motivation for media production by museums is to be able to explore a topic in much greater depth. In particular, science museums are particularly drawn to this mode of interpretation, where the construction of an item to communicate knowledge is positioned on almost equal terms with the objects from the collection. The Evoluon's Senster, installed in 1970, was commissioned by the museum's exhibition designer in order to demonstrate the feedback loops between senses and behaviour that can be found in the natural world (Gardner, 1993). The robotic sculpture moved according to the digital interpretation of stimuli to its sensors, but it required interpretation in the traditional exhibition forms of text panels and diagrams that were adjacent to the Senster's setting. The Planetarium, however, was a larger-scale project, requiring the construction of a dedicated space, the development of a means to project astronomical features into that space and the creation of a theatrical programme to interpret what was being shown with a live narrative. In this case, the museum separated itself entirely from collected objects or gallery exhibition forms of communication (labels, panels) and created something that was capable of standing alone. The motivation was to educate the public exclusively by using the knowledge embodied in the museum rather than any of its artefacts.

4 Going beyond the walls of the museum

This motivation to communicate and educate, even without reference to collections, springs from the mission espoused by so many museums. The American Museum of Natural History was incorporated with the purpose of "encouraging and developing the study of Natural Science; of advancing the general knowledge of kindred subjects, and to that end of furnishing popular instruction and recreation" (AMNH, 1908). The Deutsches Museum's present mission is to be "an outstanding place for communicating scientific and technical knowledge and for a constructive dialogue between science and society" (Deutsches Museum, n.d.b). The University of Pennsylvania Museum of Archaeology and Anthropology states that it was founded in 1887 to "bring together under one roof artefacts that evidenced the development and history of humanity from antiquity to the present" and then goes on to declare that it exists to "transform understanding of the human experience" (Penn Museum, n.d.b).

With these lofty goals, it is no great surprise that the museums saw no barrier to their activities at the extent of their physical domain – namely their own buildings. The AMNH was happy to contribute programmes to the *American School of the Air* and the Penn Museum to make such a large commitment of their time and resources to the CBS panel show *What in The World?* over its 14-year run. The Senster and the Planetarium were developed purely to impart knowledge without reference to objects, and the radio and television shows were developed to disseminate knowledge without the need for a physical museum. Both approaches continued to fulfil the mission of their institutions, even though form and format were a world away from the gallery exhibition.

Conclusion

When examining the relationship between museums and media, there is a danger that we only see the latest technologies, practices and ideas, constraining our focus to just the dominant media forms of the present day. However, museums have been engaged with media production from their beginning and have continually demonstrated a willingness to engage with new technologies and new forms and formats of media. This kind of innovation was often expensive, demanding of resources, and required the forging of partnerships with commercial and other providers. Creative strategies included using media to deepen access to collections, to extend the life of exhibition content and to impart the embodied knowledge of the museum. They also used media technologies to reach new and more distant audiences by going "beyond the walls" of the museum. These activities were almost always risky for the institution, yet museums were prepared to shoulder that risk in order to further their fundamental reason for existence – their mission.

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I.3

Revisiting the utopian promise of interpretive media

An autoethnographic analysis drawn from art museums, 1991–2017

Peter Samis

In his 2013 essay "The end of the beginning: Normativity in the postdigital museum," Ross Parry (2013) posits that digital technologies have moved from the periphery to the centre of museums' institutional awareness and identity, and from siloed departments to pervasive presence, becoming, as museum digital strategist John Stack (2013) has put it, a "dimension of everything" that happens. What has been gained and lost in this transition? The journey from periphery to centre has arguably brought with it a transition from a space of freedom, experimentation and utopian futures to confinement within present-day museum structures and strictures. This chapter proposes that the transition reveals the fundamentally conservative nature of most – though by no means all – art museums as they balk at the opportunities for greater interpretive inclusion offered by new technologies.

The chapter is also, admittedly, a personal and collective memoir – an "autoethnographic survey" written by a United States-based, if internationally involved, museum practitioner. I will draw from my own experiences and those of my peers in charting an account of the evolution of digital media over the years 1991–2017, often using notes and papers from key conferences to reconstitute a core sample of opportunities and constraints that have characterised this period. Many of those conferences took place in the United States or the United Kingdom and were conducted in English; my subjective selection by no means represents an exhaustive audit of those meetings, much less of global activity during this period. That said, colleagues from many countries participated and shared their experiences, year by year; I hope their examples remain instructive today and will continue to provide insights in the future.

This chapter focuses specifically on audience, museum interpretation and visitor meaning-making in art museums/galleries and provides historical context for the rise of digital interpretive media. It will reveal and problematise the tension between art museums' desire to reach new publics unschooled in their collections and their imposition of restrictions on how such meaningful connections may be achieved. The account represents my own personal journey in museum work, culminating in the research that led to a recent book on visitor-centred museums, which treats both analogue and digital interpretive strategies (Samis & Michaelson, 2017).

In describing what he dubs the "analytic autoethnographic method," Anderson states:

> the researcher is (1) a full member in the research group or setting, (2) visible as such a member in published texts, and (3) committed to developing theoretical understandings of broader social phenomena. (Anderson, 2006, p. 373)

In my case, all three attributes apply. I started out as a docent at the San Francisco Museum of Modern Art (SFMOMA) in the early 1980s and quickly saw how little background many visitors to modern art galleries brought to their encounters with the objects. Although through graduate and professional study my own knowledge grew apace, I noted that our visitors' did not; after all, they were engaged in other pursuits. My immersion in museum processes and the deep context behind the artworks grew exponentially when I was hired onto SFMOMA's curatorial team in 1988, but it made the chasm between what we knew and what we shared with the public all the more flagrant. I came to see what O'Doherty (1986) dubbed the "white cube" of the modern art gallery as a withholding space, one that deprived uninitiated viewers of the context that could help them build meaningful connections among the works on view and between those works and their own lives.

At the same time, in parallel, the potential of digital technologies was growing. In 1986 I had won an Apple award for the first desktop-published museum labels and catalogue – an achievement that seems ridiculously rudimentary in hindsight, but that nonetheless represented an application of cutting-edge digital technologies of the time in service to visitor experience. It took another five years before desktop computers were even capable of displaying colour images, animations and postage stamp-sized digital videos. In an analogue world dominated by television in its proliferating cable variants, newspapers, magazines, films and books, computers were still hamstrung in their ability to breathe with the pulse of life. But in the decades to come, successive generations of desktop machines would make an unprecedented array of visitor-focussed interpretive solutions available in art museums.

In 1990, Apple and IBM had begun producing the first multimedia-capable desktop computers. The Voyager Company, a Santa Monica, California-based publisher of videodiscs, came out with a potent paperback: *Technologies for the 21st century: On multimedia* (Greenberger, 1990). The book distilled the dialogues from a conference of computer industry leaders and academics that had taken place at UCLA. It promised great things ahead: the confluence of "multimedia," uniting the various disparate analogue media forms through their translation into a common computer language of ones and zeros. All media forms would be equally accessible for research and use, navigable through exciting exploratory interfaces conceived by ingenious designers, creating new modes of access. In the words of then-Apple CEO John Sculley, who was one of the conference participants:

> This new medium will not just be text or graphics, but a combination of text, graphics, sound, and motion – with the realism of television as part of it. … Personal computing has to do with building models. Television has to do with passive watching. With interactive media, the basic purpose is going to be understanding. (As cited in Greenberger, 1990, p. 44)

Not to be outdone, IBM's vice president and general manager of multimedia, Lucie J. Fjelstad, suggested that "people from the world of art, books, magazines, and public welfare must change their attitude about computer applications" (as cited in Greenberger, 1990, p. 39) and get onboard; with Sculley concluding:

> The biggest challenge we have is to move the technology out of the hands of technologists. They will make a mess of it. We've got to put it into the hands of the artists. If the group here can do something to bring this about, then we will indeed have a chance to change the world a little. (As cited in Greenberger, 1990, p. 49)

My own experience on reading the book was to imagine myriad ways in which these new tools could enable museums to restore the context that the white cube of the gallery stripped away. I quickly learned I was not alone in being inspired by the potential of these new technologies and the immersive, experiential learning they promised.

ICHIM 1991: The *Micro Gallery* and other early prototypes

The first convening of a museum-based multimedia community of practice had a cumbersome title and an unlikely location: the International Conference on Hypermedia and Interactivity in Museums (ICHIM) in Pittsburgh, Pennsylvania. That's where an eclectic international group of polymaths came together from museums, research labs, multimedia start-ups and academe in October 1991. None of us had been trained for this new technology, but we all shared an enthusiasm for what we intuited would be a fundamentally new way of unifying media and communicating knowledge.

The star of that conference was unquestionably the National Gallery of London's brand new *Micro Gallery* – one of the first educational interactive multimedia installations in an art museum of lasting impact. It was a cross between a library and a "learning laboratory": a softly lit, carpeted room in the brand-new Sainsbury Wing containing 12 ultra-high resolution (for the time) 20-inch touchscreens (Figure I.3.1). These were powered by standalone Macintosh

Figure I.3.1 The Sainsbury Wing Micro Gallery, opened 1991, at the National Gallery, London. Courtesy the National Gallery, London.

IIfx workstations, which were hidden from view, running a codebase written in C++. Visitors, of course, didn't need to know any of that.

They could simply sit down before a touchscreen and access any of the paintings in the Gallery's collection via an appealingly designed interface displaying images and texts in a painstakingly anti-aliased type free of "jaggies" (the inelegant pixelated letter forms typical of the time). Developed on what at the time seemed an unlimited budget (a £1 million sponsorship from American Express), the Micro Gallery was described as the equivalent of a 4,500-page book: it contained no less than 12,000 colour illustrations, reproduced in a 256-colour palette painstakingly optimised for the hues of European oil pigments. For ordinary users it wasn't so much the scope of the undertaking or the 20 person-years of effort that had been compressed into its two-and-a-half years of development that were so impressive, but rather the elegant clarity of its design and the full-screen picture-book-like focus that explored one artwork at a time. A few paintings were treated in great depth, meriting a sequence of eight or 12 screens: this was clearly an era where a deep dive was still prized over skimming. Holbein's *Ambassadors* famously featured an animation in which the mysterious anamorphic form stretching across the base of the painting (Figure I.3.2) was seen to resolve as a perfect skull when approached from the side, as early viewers would have experienced it when walking up the stairway along which the painting originally hung. The simple act of joining motion animation to text and image demonstrated the potential of this new mode of publishing.

The virtues of newfound hypermedia navigation were also in evidence, both through clickable links to short pop-up glossary definitions and theme screens that assembled artworks related by place, time or picture-type. These features, along with access to laser printers on which, with purchase of an inexpensive debit card, visitors could print their favourite pages and a map of the Gallery featuring their personal itinerary of chosen destination works, made the Micro Gallery

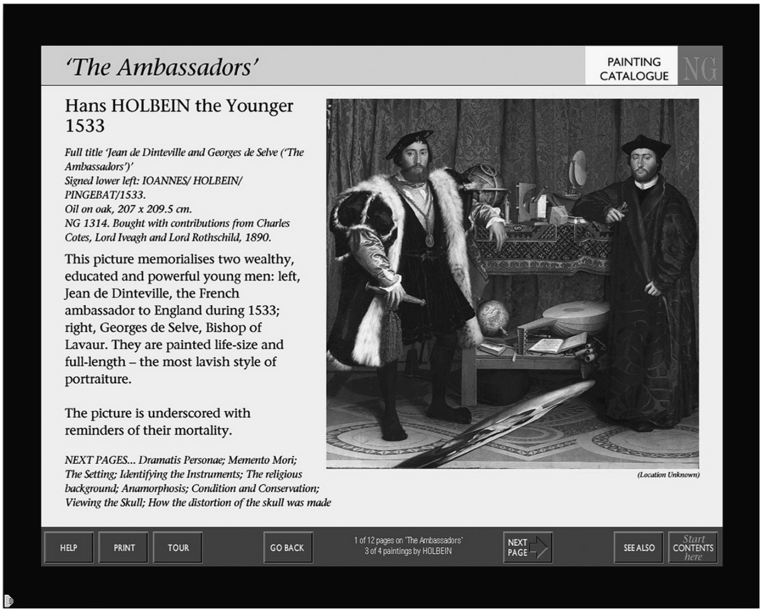

Figure I.3.2 The first in a series of 12 screens devoted to Hans Holbein's painting, *The ambassadors*, the Micro Gallery, the National Gallery, London.

a worthy precursor to such later avatars as the Cleveland Museum of Art's 2013 Collection Wall and accompanying ArtLens app (Collection Wall, 2014).

Other early visionary interpretive projects designed to engage visitors and enhance their museum experience included the *European Museum Network* (EMN), presented at the conference by Achim Lipp of Germany, and the Museum Education Consortium's *Museum visitor's prototype*, presented by Susan Stedman and Kathleen Wilson. The EMN, a project sponsored by the European Union, linked users at computer stations in eight museums in six countries through an early broadband cable network, years before World Wide Web browsers or the advent of social media (Lipp, 1994). Each museum hosted a station that combined its own collection objects with objects from the other participating museums. Multimedia assets were included, and a set of keywords operated as go-betweens to enable easy and serendipitous discovery across the 800 objects in the federated collection. Visitors were asked to make their own collections based on the objects they found; the sole pre-condition for inclusion was to write a few lines about your submission. "Ask the public to tell us what it's about," said Lipp; "not just the curators" (Lipp as cited in Samis, 1991). The populist force of crowdsourcing had already emerged as an idea.

The Museum Education Consortium (MEC) was a collaborative effort of education directors from seven leading encyclopaedic and modern art museums in the United States (Stedman, 1991). Working together with educational multimedia designers, they produced a design prototype based on Monet's *Water lilies* painting in the Museum of Modern Art's collection to test a variety of ideas and approaches to discovery-based, interactive learning. Visitor responses clearly conveyed both the engagement potential and the novelty of this experience, which departed from standard expectations of a museum activity (K. Wilson, 1991).

From the beginning, there was an acute awareness of the issues raised by the presence of electronic screens in proximity to museum collections – and the question of whether the former might pose an "existential threat" to the latter. American media producer and scholar Selma Thomas (1991) emphasised:

> The monitor exists in a real room, surrounded by real objects. … It has to hold its own, not compete; it has to acknowledge the links between what is happening off-screen and what is happening on-screen … the visual grammar that we share with the exhibition. (Thomas, 1991, pp. 164, 166)

Already in this first conference on public-facing use of digital technologies in museums, we see vectors that carry through to today: the interpretive mandate to restore context and help model viewing approaches through the use of discovery-based learning; two-way communication between museums and their audiences about objects on view; and an acknowledgment of the need for gallery designs that account for the seamless integration of interpretive technologies with museum objects and analogue resources – a blended approach.

We shall see that while all three of these practices have become widely accepted in history and science museums, they continue to pose challenges for art museums.

Excellence and equity and its applications

Many of these issues were also present in the American Association of Museum's contemporaneous policy statement, *Excellence and equity: Education and the public dimension of museums* (American Association of Museums [AAM], 1992/2008). That report posited that "museums must combine a tradition of intellectual rigor with the inclusion of a broader spectrum of our diverse society" (AAM, 1992/2008, p. 7). Echoing the philosophy that drove Lipp's European

Museum Network, it also recommended the exploration of new communication technologies and specifically called for developing tools that reflect "the different learning styles visitors bring to museums" (AAM, 1992/2008, p. 19), in recognition of psychologist Howard Gardner's seminal work on multiple intelligence theory (Gardner, 1983). Years before the emergence of the World Wide Web as a platform, the report promoted the use of emerging electronic media to extend museums' educational missions beyond their walls and the development of in-house "learning laboratories" to research, evaluate and communicate insights gleaned about museum objects. Finally, the authors suggested that museums dare to present "a variety of cultural perspectives" and not shy away from "informed but differing viewpoints" (p. 20). The newly emergent forms of interactive multimedia appeared ideally suited to delivering on all of these mandates.

A less well known but equally prescient document from this period was Kent Lydecker's keynote address, titled "Impact and implications of multimedia," at the MDA/ICHIM Conference in Cambridge, the following year (Lydecker, 1993). Lydecker, Associate Director for Education at The Metropolitan Museum of Art at the time, had early on produced slide-and-sound presentations at Washington's National Gallery of Art; he had moved on to lead the Education Department at the Art Institute of Chicago, in which capacity he had participated in the first art museum visitor focus groups (Getty, 1991), the MEC *Museum visitor's prototype* and a laserdisc project with The Voyager Company. Before an international audience of museum documentation professionals, scholars, educators, and multimedia innovators assembled at Cambridge University in the United Kingdom, he attempted to summarise the trends he saw emerging in the museum media landscape.

"The advent of interactive multimedia is changing the nature of the physical and conceptual environment encountered by visitors who come to museums," Lydecker said (Lydecker, 1993, p. 290). He went on to enumerate points of impact. Regarding exhibition scenography, he echoed Selma Thomas's comments two years earlier: "Placing interactive multimedia in museums requires the attentions of architects or space planners" (Lydecker, 1993, p. 291). In other words, you don't just place a computer station in a gallery and hope for the best. Successful design integration within the exhibition space is key. As for museum voice, without naming it, he signalled the rise of the controversial term Edutainment: "We want our educational work to delight as well as instruct" (Lydecker, 1993, p. 291). Cognizant of the fact that museum visitors are informal learners coming to museums as a leisure activity, he wrote off a more strictly pedagogical approach.

Lydecker also anticipated digital impacts on cross-departmental dynamics within the museum. He described the following roles in the development of a complex interactive multimedia project: researchers and writers; project management staff; software staff; graphic designers; human factors specialists; curators and educators; photographers; creative directors; marketing people; and development/fundraising staff. Acknowledging that such an interdisciplinary collaboration represented an extraordinary commitment that far exceeded most museums' budgets or priorities, he observed that inspiring vision – and corresponding funding – were required to initiate projects on this scale.

Finally, Lydecker commented on different types of museums' varying levels of willingness to incorporate digital technologies: "These phenomena are even more pronounced in science, history, or natural history museums that are making a major investment in enlivening their displays" (Lydecker, 1993, p. 291). At the time, there was reason to believe that art museums would soon follow suit; we shall see that most did not. Finally, he suggested that generational succession would eventually ensure that the opportunities presented by these new digital tools would be realised.

Barriers to entry: Technological and editorial

There were major technological hurdles facing early multimedia programs, including operating system limitations and hardware that we would certainly deem primitive today. Even so, project leaders often stated that an equal or greater challenge lay on the editorial side: research, development and crafting of meaningful content for non-specialist viewers.

At the same 1993 MDA/ICHIM conference, after offering a detailed summary of the Minneapolis Institute of Art's own ambitious new in-gallery multimedia programs, Scott Sayre, head of their Interactive Media Group, pointed out that:

> The ever expanding capabilities of interactive media make it easy to become overly concerned with its technical aspects. However, the MIA's experiences demonstrate that the development of appropriate, effective content is still the most difficult part of the process. (Sayre, 1993, p. 51)

Two years later, Alex Morrison of Cognitive Applications (now CogApp), pioneer developers of three successive Micro Galleries in London, San Diego and Washington, DC, expressed a similar sentiment:

> There has consistently been more work, and more different work on this front than was expected. Effective text for a general audience, reading from a screen, has to be short, accurate, visually oriented, and make good use of cross-references and glossary pop-ups. Scholars who can master art history and also turn out this kind of writing are a rare and valuable breed. (Morrison, 1995, p. 15)

Prior to this time, gallery interpretation partook more of the oral tradition than the written: it was typically assigned to docent volunteers or staff gallery educators. Published collection catalogues, meanwhile, remained the province of scholars and often limited their data to medium, dimensions, provenance, exhibition history and bibliography on the one hand, and scholarly academic essays on the other – even if museums counted on visitors to buy them for their illustrations. More akin to brochures for special exhibitions, digital media arose in the gap between those two voices, forging a popularising polysemic language born of the interdependence of word, image and video – one that could be presented in discovery-based, interactive formats.

Database versus narrative

The lineage of the two conferences that came together at ICHIM/MCN '95 was telling in this regard: Museum Computer Network (MCN) had traditionally focussed on automation of back-of-house operations, including administration and fundraising, registration and accounting, while ICHIM was devoted to the emerging field of interactive multimedia tools applied to exhibits, research and education (Cox, 1991).

In the mid-1990s, for many this gap did not present a problem. Just as art was presented in galleries with little commentary, hewing to the widespread belief that mere exposure to august works would benefit the public, many museum and computer professionals felt that the mere act of digitising collections and making them available to the public would be a boon to outsiders. Not surprisingly, work on collection databases was one of the dominant topics at both conferences. At the 1994 MCN/CIDOC conference, a census of collection inventory projects on five continents – Africa, Latin America, North America, Europe and Southeast Asia/the Pacific – was presented, each with its own set of working groups, along with five cataloguing standards. That list would grow dramatically with the advent of the World Wide Web.

But at the same conference, voices were raised to complicate this picture of museum data as a good in and of itself. In a seminal presentation attuned to the nuances and idiosyncrasies of contemporary art, Harald Kraemer, a German art historian and collections specialist, said:

> When we look at artworks through electronic media … who is responsible for the weighting of information? What can be asked, what is actually asked? (Kraemer, 1994, p. 1)
>
> Interactive multimedia technology would enable a visitor to obtain comprehensive information on the creation, occasion, materialization, function and original presentation of an individual work, as well as reactions and documentations, the work set against the artist's background, his/her bio[graphical] data, artistic environment, market, society, cultural life in general and scientific [i.e., art historical] discourse. (Kraemer, 1994, p. 5)

Similarly, Bernadette Goldstein, then director of new technologies at the French National Museums, confessed: "Starting with a database, I can't interest the public" (Goldstein, 1994). Like Alex Morrison, she anticipated the creation of a new role, cultural interpreter (*médiateur culturel*), what we might now call an interpretive media specialist: someone with a leg in both worlds, at home with both the broad public and the art world and versed in the capabilities of new media technologies. Later, working with Canadian researchers, she elaborated:

> The public, whether museum educators, curators, computer technicians or young people, wants the emotion and subjectivity of the writer to be combined with a scholarly grasp of the field. This observation takes us some distance from documentary and scientific databases. (Boily, de Guise, & Goldstein, 1996, p. 60)

Writing from India coincident with the widespread emergence of the World Wide Web, science technologist G. S. Rautela flagged the pitfalls of assuming that museums were meeting visitor needs merely by compiling database catalogues without making their information "useful and meaningful" to their audiences: "We must also not forget that the information age is really about people communicating with people" (Rautela, 1996, p. 32).

So while the imperatives of computers and their adoption by museums drove toward databases, the imperatives of audiences drove toward storytelling and immersive experience.

Early examples of museum multimedia storytelling

Some art museums, too, were at the forefront of multimedia storytelling. In the mid-1980s, educator Douglas Worts had already begun developing activities that meshed analogue and digital interpretation in the galleries of Toronto's Art Gallery of Ontario, with the aim of enriching personal meaning-making by visitors. Over time, these resources came to include: physical photo albums reproducing historic pictures and ephemera; Macintosh computers with games, reference information and space for visitor comments; integrated visible storage for sketches by the artists on view; audio "digital illuminators"; and an immersive sound experiment in guided viewing. Extensive visitor observation and evaluations were conducted at each step of the way, proving that length of engagement with the actual artworks was extended when supplementary resources provided context for viewing. The changing activities eventually grew to include "Share Your Reaction" cards – an opportunity for visitors to participate by writing or drawing their personal responses to the artworks with pencil and paper supplied, and a desk-like writing ledge right in front of the art (Worts, 1989, 1990, 1996).

One of the benefits of air travel is high-altitude perspective. In 1990 the Minneapolis Institute of Art's director Evan Maurer was prompted by a "vision on a plane" to imagine the transformative potential of interactive multimedia on visitor experience throughout the galleries of his museum. His vision was contagious: he succeeded in securing an extraordinary multi-year grant from General Mills of over a million dollars and the Minneapolis Institute of Arts founded the first department of New Media in an American art museum. The MIA Interactive Media Group, under the leadership of Scott Sayre, began producing a series of 17 gallery-based digital interactives – typically called "kiosks" at the time – that were placed in or adjacent to the galleries, treating every collection area and offering visitors just-in-time contextual information about the objects on display nearby (Figure I.3.3).

The question of how new technologies could encourage meaning-making across a wide range of visitors surfaced again and again in these conferences. At ICHIM '97 in Paris, Stanford professor Larry Friedlander (1997) cautioned that for this transition to take place, museums would need to build an adequate tech support infrastructure, and that among the risks would be a potential loss of museum authority. Friedlander suggested a range of scenographies, no doubt inspired by his own training in theatre and dance:

- Environmental
- Kinaesthetic – whole body
- Different presentation styles: playful, informal
- Small and large scale

Then he raised a series of non-trivial questions: "How to introduce technology into traditional spaces?" "How to make room for technology in already crowded galleries?" This line of inquiry has turned out to be a wicked problem for art museums – one for which there is no ready

Figure I.3.3 Minneapolis Institute of Arts: Gallery view ca. 1995 with artworks and interactive "kiosk." Photograph Minneapolis Institute of Art.

solution that satisfies the requirements of curators, audiences and the museum staff charged with meeting visitors "where they are."

The role of museum visitors as active agents was emphasised by others as well. Xavier Perrot (1995), whose doctoral dissertation on the application of new technologies to museums was the first in France on the subject, enumerated three intellectual modes of multimedia, of which only one was strictly didactic:

- Access to documentation
- Immersive narrativity
- Simulation

And at the first Museums and the Web (MW) conference, held in Los Angeles in 1997 (Samis, 1997), cognitive psychologist and media maker Slavko Milekic (1997) emphasised the potential of computers as a creative space, departing from the standard information interface aesthetic of either databases or narratives by giving children a touchscreen and tools for direct manipulation – even alteration – of images.

The idea of using interactive technologies to open up what was seen as an austere, even disciplinary, model of visitor engagement in museums' physical spaces found academic support at MW as well. Informed by Tony Bennett's New Museology movement, social scientist Terry Hemmings and members of his team from Manchester Metropolitan University collaborated with museum practitioners in a return to first premises, asking "what a museum institution is" and "what a museum visit is" for (Hemmings et al., 1997). "What are we identifying when we talk of the visitor?" Hemmings asked, pointing out that visitors, too, were sites of contested meaning. Andrea Witcomb (1997) asked if museums were simply intent on "constructing narratives of legitimacy … using objects to support an evolutionary narrative" and cited George Brown Goode's characterisation of traditional museology as "a bunch of labels illustrated by specimens." Finally, Peter Walsh (1997) from the Davis Art Museum at Wellesley College suggested that the emergent World Wide Web might offer "a space where we can contest museums' institutional hegemony of privilege, entitlement, and inevitability."

This emphasis on visitors' own agency and parallel questioning of museums' traditional pose of authority led to new freedoms and a certain irreverence of tone in the next wave of innovations, implicitly anticipating the arrival of "Web 2.0" and today's social Web.

Intelligent spaces: *Points of departure* at SFMOMA

In art museums, as the capacities and freedoms afforded by technology expanded, the impulse to open up and experiment with the scenography of museum space followed – to a point. In 2001, at the penultimate moment of the Dot-Com Boom, with the encouragement of its technophile director, David Ross, the San Francisco Museum of Modern Art opened two companion exhibitions, *010101: Art in technological times* and *Points of departure: Connecting with contemporary art*. The first presented an array of artists whose work utilised digital processes; the second was a show thematically organised around common visitor questions, conceived as a "prototype of the museum of the future" in which technological affordances (in this case, partially developed in collaboration with the MIT Media Lab) helped people connect with unfamiliar artworks. Innovations included the first use of brand new multimedia Personal Digital Assistants (PDAs), precursors to today's smartphones. These allowed visitors to hold videos of artists in the palms of their hands as they stood before those artists' works. The exhibition also included "smart tables" – actually simply large upturned touchscreens, one per gallery – in furniture that blended with the gallery finishes (Figure I.3.4).

The smart tables were themed to the artworks in each gallery and comprised two or three levels of content:

1 A short looping video montage of curators informally discussing the works surrounding the viewer – a sort of "Curator-in-a-Box" with personality.
2 The second level featured short videos of artists whose works were on view in that particular gallery – often seen at work, revealing their creative process.
3 Some galleries featured as a third level an interactive touchscreen activity inviting visitors to experiment with the processes at play in one or more of the works around them.

All three "levels" were immediately available on the interface; each was timed to last two minutes or less. Deeper-dive, seated story stations were available at the periphery of the galleries; they displayed relevant segments from the multimedia program *Making sense of modern art*. Finally, in the rear of the exhibition, a *Make your own gallery* simulation game invited visitors to re-arrange the artworks in the show according to their own personal interests. A set of in-depth evaluations revealed that the thematic organisation of the artworks, the informality of the voices – both curatorial and artistic – and ubiquitous availability of technological mediation, if desired, helped make the show a success with visitors. It confirmed the Art Gallery of Ontario's finding that availability of relevant context leads to a net increase in visitor dwell time with the art itself. That said, by the time the exhibition ended, the Dot-Com Bubble had burst, the director had moved on and the curtain abruptly fell on further experimentation of this kind (Samis, 2001; San Francisco Museum of Modern Art, 2001).

Points of departure was presented at the ICHIM 2001 Conference in Milan. A confluence of theoretical models seemed to be converging to establish a foundation for visitor-centred practice: these included psychologist Howard Gardner's multiple intelligence theory, which called

Figure I.3.4 Visitor accesses a "smart table" in *Points of departure* exhibition at SFMOMA.

for a variety of "entry points" gauged to different cognitive sensibilities (Gardner, 1983); Mihalyi Csikszentmihalyi's research on "flow" experiences, which enable people to scaffold gracefully to greater degrees of knowledge and appreciation (Csikszentmihalyi, 1990); and the Nielsen-Norman Group's interaction design guidelines (Norman, 1994, 1999; Nielsen, 2000) which called for computer interfaces that suited human habits rather than requiring humans to adapt to computers.

Taken together, these frameworks led to an optimism that we were re-inventing museum exhibitions in ways conducive to optimal visitor meaning-making in the gallery. For example, Luigina Ciolfi from the Interactive Design Centre at the University of Limerick, consulting on a project for the National Museum of Ireland, emphasised the potential of moving beyond interface design to integrate the whole museum as an interactive space, with digital and analogue affordances built in in unobtrusive but responsive ways. While emphasising the importance of environmental factors in supporting visitors, she was in some ways anticipating The Internet of Things (Ciolfi, Bannon, & Fernström, 2001).

The grail of location-sensing: "Meeting people where they are" shifts to the mobile space

At the turn of the millennium, the idea of meeting people where they are – geo-localisation of "just-in-time learning" – was really taking hold. In history and science museums, the integration of new media among the exhibitry with an eye to maximising visitor meaning-making was becoming commonplace, reinforced by an increasingly robust visitor studies literature. But in most art gallery spaces, interest in visitor studies and just-in-time media resources to contextualise the collections remained the exception rather than the rule. A kind of aesthetic apartheid reigned, continuing to interdict anything more exotic than a wall label.

In this atmosphere, the one permitted exception was audio tours: since the widespread adoption of cassette recorders for the first blockbusters of the 1970s (Tallon, 2008), they had become museums' interpretive technology of choice – theoretically the ideal solution, as they left no blemish on the otherwise pristine galleries but passed through with the visitors who carried them, like those invisible spectres in long exposure 19th-century photographs. Indeed, many conference contributions from the past 20 years speak to the constantly changing form factors, distribution models and hardware and software challenges that accompanied the shift from the Walkman (analogue and linear) to CD-players (digital and randomly accessed) to MP3 players, and thence to iPods and mobile phones (Schwarzer, 2001; Proctor & Tellis, 2003; Tellis, 2004; Petrie & Tallon, 2010; Proctor, 2011). Others also delve into the editorial side: creative storytelling techniques and experiments with voice and tone (G. Wilson, 2004; Samis & Pau, 2006; Van Loon et al., 2007; Walker, 2007; Pau, 2017).

In the first decade of the 2000s, literally millions of dollars were spent on the elusive grail of mobile geo-localisation, a goal that proved to be ripe in theory but not in practice. First the Smithsonian Institution, and then the Getty Museum, committed to ambitious indoor geo-locative projects that proved beyond the capacity of the technologies of the time. In 2004, the Smithsonian put out to bid a unified contract that would cover six different museums on Washington's National Mall: the *SIGuide*. The promised functionality was ambitious: visitors would be able to take pre-set tours or customised tours that matched their interests; view multimedia content, such as documents, photos and audio and video clips; locate and be directed to exhibits, landmarks or other members of their group; communicate with someone or everyone in their group; create a schedule of activities and receive reminders when events are due to begin; save content, messages, sketches and notes to a scrapbook they could subsequently access via the Web; and much more (Edson, 2008). In this case, the financial onus was on the "winning" vendor – if they succeeded, the logic went, the ample reward would also be theirs in the form of a revenue-share in proceeds from device rentals, as well as the opportunity to extend the system further to other Smithsonian museums. Unfortunately, the mismatch between technology, budget and the times was fatal: the vendor went bankrupt, and the project could not be completed.

In the case of The Getty, the museum was willing to invest from its own coffers, so the pockets were commensurately deeper. Work on the project began in earnest in 2002, and the mobile platform kept shifting as new generations of handheld hardware were introduced, each with greater speed and capacity, but also freighted with a changing operating system and feature set. The goal was for gallery visitors to be able to hold a PDA provided by the museum on which they would receive push notifications of content regarding the artworks immediately in their view. The application interface visitors saw would be overlaid onto data drawn directly from the museum's collections management system, with location calculated by Wi-Fi triangulation. Audio and video would be provided by two more servers, all piped through the same network. No less than five internal departments and as many separate vendors were involved in realising this vision, which proved complex and unwieldy. On launch in 2005, Wi-Fi lag times and performance anomalies taxed visitors' patience, and the entire project, which had dragged on for four years and cost untold millions of dollars, was quietly scrapped before year's end (Honeysett, 2008).

The Gartner Hype Curve

Museums were not alone in being seduced by the siren song of cutting-edge technologies. The phenomenon has been succinctly summarised by the technology consulting firm, Gartner, in its famous "Hype Curve" (Figure I.3.5).

In the immortal words of futurist Paul Saffo (1997), "Never mistake a clear view for a short distance." The time elapsed between a "Technology trigger" – a vivid description of how a new digital innovation will work and change our lives – and its "Plateau of productivity" – when the technology actually becomes standardised, bug-free and functional – can be 15 years or longer. The makers of *SIGuide* and *GettyGuide* had opted in prematurely, at the "Peak of inflated expectations" for Wi-Fi location-sensing, and both taken a bath in the "Trough of disillusionment." Audio tour companies, in the meantime, had a business model that compelled them to assess the

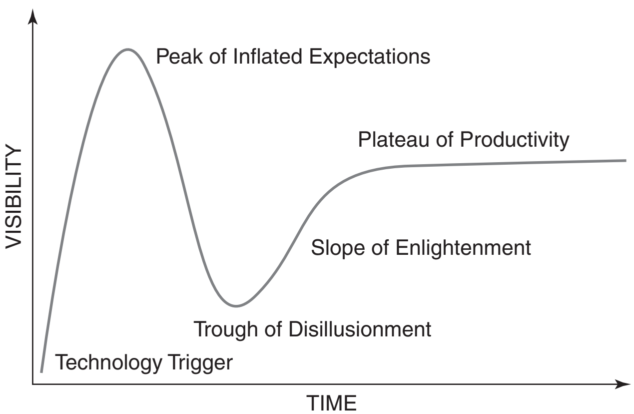

Figure I.3.5 Gartner's Hype Curve. Reproduced from Wikimedia Commons.

risk between technologies that could be imagined and those that had been proven; they continued to rely on a simple numerical keypad for stop selection for many years to come. Meanwhile, they struggled to keep up with the constantly evolving form factors of mobile hardware.

Even as of this writing in 2017, ten years after the demise of The Getty's visionary *Guide*, indoor geo-positioning is just beginning to become reliable enough to meet the needs of museums and their visitors (Pau, 2017). It may – or may not – finally be reaching the fabled "Plateau of productivity."

When digital alone is not enough: Blended solutions

While the mobile space has been the locus of enormous experimentation and expense, to the surprise of many and the chagrin of their creators, mobile apps and handheld guides about museum collections still typically reach only a small fraction of visitors – less than one in 20. Mannion, Sabiescu and Robinson (2015) report that "across the sector, a take-up rate of around 3 percent for permanent-collection audio guides is standard." This point has been driven home again and again – even as visitors increasingly use smartphones to photograph and share their own social media moments during museum visits.

Indeed, a study conducted at SFMOMA in the context of a multi-track, analogue and digital interpretive strategy for an exhibition by contemporary artist Matthew Barney (Samis, 2007) revealed that:

1. In terms of sheer numbers, traditional interpretive media such as wall texts and object labels are the foundation on which visitor learning is built. Digital or electronic media act as a supplement, used by a minority of the visitors.
2. The most effective interpretative strategy is born of a mix of the analogue and the digital, providing visitors with a menu of diverse yet complementary offerings.
3. For those unfamiliar with a contemporary artist's work, presence of interpretive resources may make the difference between alienation and engagement.
4. Use of a greater number of interpretive resources correlates directly with enhanced meaning-making, greater appreciation of the artist, the exhibition and the museum experience.

In museums that do not outlaw fixed digital interactives from their galleries, the potential for designing interpretive strategies that blend digital and analogue components in service of a richer visitor experience is limited only by the imaginations of museum staff and their consultants. A perfect example of this blended approach to gallery design and interpretation is *Splendor by the hour*, an exhibition of objects from the European Decorative Arts collection at the Detroit Institute of Arts (DIA). The exhibit starts simply, with an introductory sign that situates visitors in the late 18th century, on the cusp of the French Revolution. Room by room, moment by moment, visitors move through an aristocrat's day, until we are invited to take a seat as a banquet is laid out before us, a video projected onto the table surface using … the very same silver and porcelain that surround us in the display cases. The patter of French voices – first the servants, then the gentry arriving and taking their seats – invite us on a virtual gastronomic and cultural adventure, embedding us in the lives of these objects and inserting these objects into our imagination (Figure I.3.6).

Alongside, the wall panel announces:

> Dinner culminates with dessert – the most sumptuous part of the meal. Pyramids of candied fruits and sweets and coolers of ice cream transform the table into a sugarcoated tablescape, reviving the appetites of the guests.

Figure I.3.6 Take a seat at the table for this courtly video banquet. *Splendor by the hour* at the Detroit Institute of Arts.

"Transforming the table into a sugarcoated tablescape." The richness of metaphor is so far removed from the standard museum label that it bears quoting. These novelistic wall texts and the immersive, inviting video installation where we imagine that each course of dinner is being served to us are a model for bringing distant times – and the objects that survive from them – back to life.

In another example, as part of an effort to welcome visitors as vital participants in the history and multiplicity of their state, staff at the Oakland Museum of California (OMCA) developed *You are here*, a digital drawing activity that was integrated into their painting and sculpture galleries. The galleries present at first glance as a salon-style array of portraits – many sizes, shapes and periods, returning our gaze. Some sitters are known and some not; some are painted by famous artists and others not. They all come from the museum's collection – except two (Figure I.3.7).

Those two frames on the wall house luminous screens. They don't stand out much at first, but you see them because they're a bit brighter – and they *change.* To the left are two stools and up-turned touchscreens sticking out from the adjacent wall. On the first screen, an array of portrait thumbnails drawn by other visitors who have passed through. As visitors click on them, they re-constitute before our eyes, from the first stroke to the last. The second station offers visitors their own opportunity to draw a self-portrait. Such exercises, simple as they are, raise questions that encourage a second look and consideration of the portraits on the wall. What is it to make a self-portrait? Which lines do you make as you go? Which opportunities do you take; which leave behind? What is the right tone to strike – or, having struck one, to change?

When visitors are done, they may look back at the screen to their left, or to the portraits on the wall to their right, gazing with newfound curiosity and respect. And of course, their freshly created self-portraits can be accessed online, posted and shared – which has become an essential part of how we ally and align ourselves with experiences that affect our lives today.

Figure I.3.7 *You are here*. California Portrait Gallery at the Oakland Museum, California. Photograph Dino Morrow.

Conclusion

In many museums, a fundamental and unresolved ambivalence remains over whether the presence of electronic screens larger than those that pass in the palms of visitors' hands has any place in the galleries. In the words of Scott Sayre (2013):

> Art starts in a messy, physical, emotional environment and ends up in a sterile, clean room environment with little or no evidence of the human aspect of its creation. Science museums, on the other hand, often deal with complex, highly controlled work, developed in a clean room environment, which ends up being exhibited in a highly interactive, physically engaging, social environment. (Sayre, 2013)

But the fact remains that only 1 in 20 visitors, roughly, takes a mobile tour, whatever its form. This author would argue that if museums want to reach their visitors just in time in the galleries when they need it most, they have to go further. Mobile alone will not do it. A number of museums have taken this bold step and understand that technology alone is not always the most appealing solution to their audiences. They have blended a variety of interpretive affordances in their galleries, in hopes of connecting novice and non-expert audiences with the art (Samis & Michaelson, 2017). Some have even gone a step further by replacing Artificial Intelligence with *real* intelligence, augmenting or replacing their security guards with staff gallery hosts trained to engage visitors in dialogue about the works on display.

Without necessarily regarding technology as a panacea, history and science museums have displayed little of art museums' approach/avoidance attitude, and have adopted a more pragmatic approach, embracing digital media as a natural component in their toolbox of gallery-based strategies: yet another way to engage visitors with the objects that have been stripped out of the world and displayed in their galleries. The story of how art museums will also rise to this challenge has yet to be written.

One might say that it is not just museum objects that are sites of contested meaning, but museum visitors as well, as different members of museum staff vie for the rights and privileges of their preferred constituents. These constituents include: professional peers and sophisticated collector-trustees, who get white glove treatment; members of the fabled multi-profiled beast known as the "general public," who fend as best they can; and the legions of non-visitors, often of diverse education levels, ethnicities and classes, many of whom assume that art museums are not for them. In museums that prize the first group above all, capturing the digital in the language and logic of the museum's organisation and mission means subjecting it to the constraints and etiquette of an aesthetic elite. It is made to *behave*. In museums and galleries that have a more broadly community-focussed vocation, blended solutions such as the DIA's and OMCA's become possible.

Looking back at Kent Lydecker's predictions for the digital future articulated back in 1993, Paul Saffo's epigram once again comes to mind: "Never mistake a clear view for a short distance." For now, almost a quarter-century after Lydecker's predictions, most have come true in one form or another, and the Millennial generation, born shortly before his talk, has begun to enter the professional ranks of museum middle managers and exert a real impact, fusing curatorial practice with the potential unleashed by what was way back then called "New media." Indeed, it is with their coming of age and into professional status that the digital is being "normalised" and we are entering the seamless environment of the "postdigital." That said, this author would argue that some of the bright disruptive potential of early digital media has been tamed in art museums by the perpetuation of entrenched conventions of the pristine "white cube" gallery environment, which Millennial generation artists continue to expect as the necessary backdrop for their experimental interventions.

Between the reluctance of many museums to avail themselves of interpretive media in the galleries, and the reticence of many visitors to "opt in" to mobile audio, a gap persists between supply and demand. We might call it an "interpretive deficit." That said, the public isn't demanding tech per se. What they're asking for is *meaning*: a memorable, emotionally compelling experience, no matter how it's delivered. Technology, for all its changing form factors and expanding capabilities, is optional; relevance, however, simply is not.

Acknowledgement

This chapter is dedicated to the memory of Xavier Perrot (1962–2007), intrepid and irreverent museum multimedia pioneer – and good friend.

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1.4

Online collections, curatorial agency and machine-assisted curating

Bodil Axelsson

Together with buildings, collections and exhibitions, digital media are intrinsic to museums today. Most museums use websites as shop windows to present current exhibitions and events to attract people to visit the museum. The websites often provide entrance points to public collection databases, and the ubiquitous social media buttons show that museums deploy contemporary networking technologies as complementary platforms through which to engage visitors. The websites highlight the present-day museums as media spaces (Russo, 2012) and as part of a "post-scarcity culture" with images, texts and data available on a massive scale (Cairns & Birchall, 2013; Hoskins & Holdsworth, 2015).

When online activities are an integral part of many people's everyday lives and there is an overwhelming abundance of information, curating has become a buzzword (Cairns & Birchall, 2013). It is used as shorthand for bringing together and presenting content to guide people through popular culture, art and crafts. Like museum curators, online curators filter for quality and relevance. They organise cultural bits to collections and exhibits with audiences in mind.

In these new spaces for curatorship, digital technologies are decisive, not only in their capacities for providing infrastructure for circulating collection items, but also for how their accompanying values tie into changes of the social role of museums. New technologies promise to make heritage more "participatory," "user-centered" and "collaborative" (Giaccardi, 2012; Hartley, Lucy, & Briggs, 2013), but at the same time this development makes curating dependent on invisible technological infrastructures (Cairns & Birchall, 2013).

The aim of this chapter is to highlight the transformation of curatorial agency of display, that is, the capacity to employ techniques and genres for showing, performing and influencing the ways in which museum objects are interpreted, framed and contextualised (cf. Kirshenblatt-Gimblett, 1998). The chapter evolves through critical reviews of two strategic examples of museums that have reformed their collection databases with the aim of providing new modes of audience engagement. The Swedish museum agency LSH (Livsrustkammaren, Skoklosters slott, and Stiftelsen Hallwylska museet) and the Dutch institution Rijksmuseum represent two main takes on how to navigate in online databases: text-based search and discovery-based navigation. This chapter will point out some implications that the two cases have for critical studies of online databases.

Curatorial agency within the museum

What it entails to be a museum curator is contingent on the changing patterns of museum organisation. When curating evolved as a profession in the late 19th century, curators acted as guardians of private and public collections, often exhibited in their entireties. Curators preserved, protected and displayed artefacts, and curatorial agency and authority were based on knowledge of collections. Up until the post-war period, curatorial work for the most part was concerned with structures within museums. Then curators were also expected to work with audience-related activities (Norton-Westbrook, 2015).

Museum work is now divided between a range of professions (Norton-Westbrook, 2015). Curators are often specialised in choosing and arranging artefacts to create experiences, evoke a response or facilitate discussions. Curators may take on roles such as political activist, artistic director or public investigator in order to produce new critical knowledge, not only on collections, but also on contemporary issues (Arnold, 2015). They may also be expected to secure funding for exhibitions, acquisitions and research (Norton-Westbrook, 2015). They collaborate with other museum professions such as educators, marketers and recently also IT-managers and technology specialists, as well as with communities and groups outside museums. Thus, museum curators often orchestrate a wide range of collaborations with colleagues, communities and experts (Arnold, 2015; Gurian, 2010). Nevertheless, the agency of display is deeply embedded in institutional structures, and curatorial agency is dependent on museum-specific organisation, as well as internal and external dynamics and policy developments (Norton-Westbrook, 2015).

Today, curatorial practices at museums cannot be separated from the ways in which the advent of digital media has promised to solve a whole range of challenges facing museums. Kirsten Drotner and Kim Christian Schrøder suggest that museums navigate between two main discourses: to engage audiences as subjects for learning or to serve them in terms of customers and stakeholders (Drotner & Schrøder, 2013, p. 6). The ways in which many websites focus on activities at the museum, ongoing exhibitions and events, as well as learning resources, provide evidence of both discourses. However, it might be fairer to split the second discourse into two intertwined challenges (cf. Barry, 2001; Ross, 2004). Changes in cultural policies and funding opportunities have opened up museums to the pressures and effects of consumer markets. To gain legitimacy, museums have to prove themselves in terms of numbers of visitors. Digital technology fits this logic well, as it is a relatively straightforward procedure to prove engagement by displaying numbers of website visitors, digitised items and downloads from collection databases as well as social media likes, friending, sharing and hashtagging.

As a parallel to increased marketing, the new museology from the 1980s urged museums to open up to local knowledge, popular memory and cultural diversity (Mason, 2005; Russo, 2012). These changes were fuelled by cultural theory, making museums sensitive to identity politics and the social and ethical judgements involved in curating. It was widely acknowledged that curators actively shape knowledge and thus are engaged in a politics of representation (Hooper-Greenhill, 1994; Lidchi, 1997). Museum curators were motivated to think through how they exercised power and how their actions were involved in the business of classification and differentiation, not only of objects, but also of people (Mason, 2005).

For the reformers, digital media have become agents of change (Cameron, 2008; Cameron & Mengler, 2009; Cameron & Mengler, 2015). Public online databases and social media platforms like Facebook promise to respond to calls for a more democratic and participatory museum culture (Giaccardi, 2012; Kelly & Russo, 2010; Russo, 2012). In order to reform museum practice from within, professionals operate within global values and networks. There is now a well-established international community of digital scholars and practitioners that converge at conferences such as Museum and the Web, MuseumNext and NODEM (Drotner & Schrøder, 2013).

In many discussions, the rationality for adopting digital media rests on a notion that audiences outside the museum a priori have agency in terms of being active and creative producers of knowledge:

> The authority of cultural institutions by virtue of their control of interpretation to their collections is challenged when collections are digitized: once cultural content is converted to digital media and distributed on multiple platforms, it is part of the public domain and accessible through several channels. This shift is coupled with the individual ability to collect, archive, control and share across peer-to-peer distributed networks. (Russo, 2012, p. 152)

Contrary to the high hopes ascribed to digital media in museums and digital media studies, recent work on museums and social media based on media and communication studies highlights the fact that digital media do not necessarily relinquish agency to audiences. Museums still control visitors' voices (Noy, 2016). Critical approaches from media studies point to the need for an increased reflexivity concerning the heterogeneous institutional voices that frame, manage and discipline the social media flows of museums (Gronemann, Kristiansen, & Drotner, 2015; Kidd, 2014; Runnel, Pruulmann-Vengerfeldt, Viires, & Laak, 2013).

Critical media studies may also provide insights into how sociotechnical arrangements shape interpretations of collections. In her study of social media, professor of comparative media studies José van Dijck points to how interaction on social media platforms is shaped on macro as well as micro levels. On a macro level, social media platforms constitute "an ecosystem of connective media" (van Dijck, 2013, passim), in which data about users constitute valuable assets. In this ecosystem, platforms integrate due to partnerships and competition between owners. On a micro level, social activity is steered not only by norms for social interaction, but also by software that direct user behaviour through computational processes. Software processes data, that is, information and metadata that describes this information, in order to make it searchable and findable. Software consists of several components. Protocols, that is, programmed rules, govern how users interact and what they are able to do with data. Then there are algorithms instructing machines to produce a certain output from a given input, for example to weight and select data. Finally, there are visible interfaces instructing people how to use platforms, as well as invisible interfaces such as application program interfaces (APIs) connecting data, software and hardware (van Dijck, 2013).

Van Dijck's framework is intended for the study of social media, but it may be used as a tool for unpacking the interplay between human curatorial agency and computational processes when museums reinvent their databases for public use. Like social media, online databases consists of data and metadata. Databases' entry points and the outcomes of searches rely on interfaces, algorithms and protocols designed by museum professionals in collaboration with technicians. Just like in social media, selection is automatised. Therefore, the agency of display is machine-assisted. Moreover, van Dijck's framework reminds us of the fact that the ecosystem of connective media leaves no separate space for public or nonprofit platforms as interoperability between systems is part of the business model (van Dijck, 2013, p. 166).

Connecting to a global search engine

The Swedish museum agency LSH, which in 2017 merged with SHMM, another museum agency, holds three collections of 90,000 cultural historical objects and art works. It has in recent years turned to digital media to reform its audience engagements. The change at LSH was led by a digital unit comprised of six persons with expertise in curating, coordinating and photography. In 2012, the digital unit initiated the "Open Image Archive project," which later on formed the basis for the playful use of images at a Facebook account run by a group of pedagogues. Funding opportunities and national cultural policies provided strong incentives for starting the project, and the head of the agency gave the then recently formed digital unit a mandate to make as many items as possible free to circulate and download (Axelsson & Wittgren, 2017).

LSH opted for maximum use of their collections and tapped into the open content movement to grant audiences permission to share and download items. LSH collaborated with the Swedish branch of the nonprofit foundation Wikimedia and licensed their data for the Creative Commons. The licenses they used allowed the agency to regain rights to their images and yet give the public permission to share and use them under conditions provided by the museum as a copyright holder. Details regarding technology are also available online for fellow professionals and the public (Andersson, 2015).

LSH's "Open Image Archive project" relies on a text-based collection interface making searches dependent on the design of data and metadata. Online databases originated as tools to administer collections, to assist preservationists, curators and researchers on keeping track of objects. As such, they complement and replace analogue catalogue cards. These analogue media for recording collections were reflections of scholarship and expertise that assisted curators in their capacities to interpret objects. Far from being objective records, both their structure and the different ways in which they were employed revealed curatorial and disciplinary passions, values and biases (cf. Knell, 2007). When museums like LSH now publish their databases online in order to invite audiences to also explore their collections, one of the major obstacles to audiences' curatorial agency is the disciplinary and idiosyncratic information database posts have inherited from their forerunners (Wittgren, 2013). Information such as dates, author, descriptions, keywords or classification is often inherited from analogue registers and is reused as metadata. However, producing metadata is also a chance for museums to make data more accessible and reconfigure power relations with audiences (Figure I.4.1).

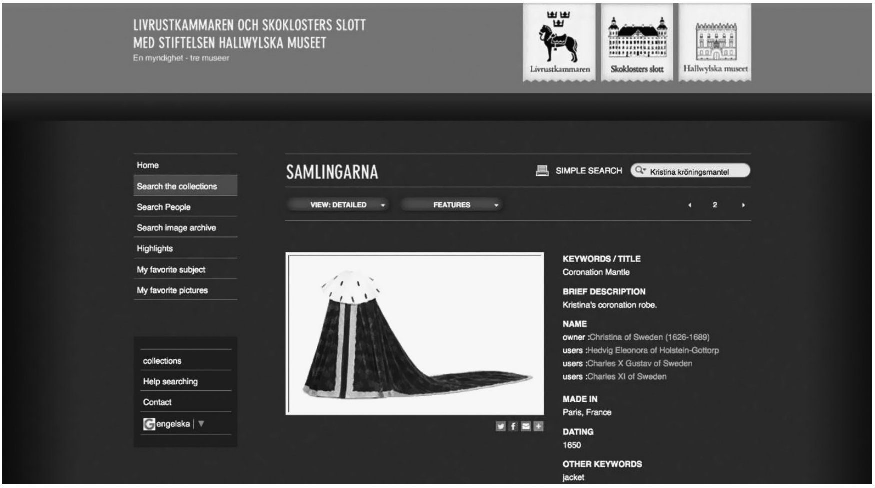

Figure I.4.1 Screenshot from the Swedish museum agency (LSH) collection database interface with Kristina of Sweden's coronation mantel. Outside the picture frame there are links to related contexts, such as information, description, provenance, literature and related objects in the database. Courtesy The Swedish museum agency LSH.

As programming have become increasingly sophisticated, computers may automatically link individual collections into external datasets. LSH benefitted from these possibilities and collaborated with developers at Wikimedia to produce metadata that matched Wikimedia's categories and scripts to upload images to Wikimedia Commons. In addition, LSH used APIs developed by K-samsök, a national aggregator for cultural institutions' data that serves Kringla (national) and Europeana (European), interfaces for digital heritage resources (Andersson, 2015).

LSH thus created a range of entry points to their collection. Even so, the overarching impression is that the audience is approached either as a museum professional with expertise with disciplinary museum vocabularies, a developer of museum databases or as a member of the Wikimedia community. Firstly, their collection items are available via a text-based search a few clicks away from the museum agency's main webpage. Visitors approaching the online collection find guides on how to do searches either in the collection's database interface, by names or among images. Newcomers are encouraged to start with recommended highlights, and a menu invites visitors to make a personal collection ("Livrustkammaren, Skokloster slott och Hallwylska museet. Sök i bildarkivet," n.d.).

When opening a post, there is generally a visual depiction of an item accompanied by a description, and social media buttons invite the visitor to share in personal networks. On Wikimedia Commons the image is fitted into this site's particular white and blue interface with information on the organisation and its buttons for downloading and sharing. The design of this interface seems to build on the premise that the visitor is as interested in the organisation and its way to present data as she is in the collection item.

The way in which LSH links into Wikipedia by the use of Linked Open Data suggests that the agency also takes on an educational mode of address to audiences. Automated linking of data, when combined with Wikipedia, offers a means to produce context and narrative interpretative frames. Linked Open Data connects information from different sources through "triples," that is, two digital entities joined by a third digital object (called a predicate) that expresses a connection between them (Bradley & Pasim, 2017). As explained by the head of the digital unit in a blog:

> To take a familiar example. Gustav II Adolf [a Swedish king, 1594–1632] rode on the horse Streiff at the Battle of Lützen. Previously, K-samsök only contained information about Streiff. That information certainly said a lot about how the horse looked, but not so much about why it is preserved or why it's interesting. In order to give an entrance point to Streiff's history, at least two components are necessary: Gustav II Adolf (an agent, a person who does something in a common language, a subject) and the Battle of Lützen (an event, a historical event that gives the subject its context). The chain becomes much more understandable, Gustav II Adolf rode on Horse Streiff at the Battle of Lützen. But if you do not know who Gustav II Adolf was or that the king died on the horse at the battle of 1632, you still need more information. Therefore, all historical events that LSH has delivered to K-samsök link to articles in Wikipedia. (Nilsson, 2013)

In terms of technology, this "human-assisted automated storytelling" might appear as contemporary, but in terms of historiography it stands out as rather conventional. It harks back to the ideological and historical underpinnings for the Royal Armory. The museum is said to have been founded by the same king that figures in the story above. He wanted his belongings to be kept for eternity, and later monarchs followed his example. When royal, aristocratic and private collections during the 19th century were mobilised as cultural underpinnings for the emerging modern nation-state, the Royal Armory was turned into a public museum (Widén, 2011).

The story also ties into a 19th-century model for the national history of kings and battles, a genre that in recent years has gained a new readership through popular history magazines and best-selling books (Axelsson, 2012). During the national romantic era, in Sweden, Gustav II Adolf was celebrated as a war hero and still is in some circles. Today, critically-minded historians point to the king's role in Sweden's imperial ambitions in the Baltic region during the 17th century. There is thus a possible critical interpretation of the agent Gustav II Adolf and the event of the Battle of Lützen. However, when LSH data is linked into Wikipedia, the interpretation has to comply with Wikipedia's basic rules. There are two such rules in particular that set the limit for the interpretative frame. Wikipedia articles have to be written from a "Neutral Point of View" and "No Original Research" is allowed among the mandate sources (van Dijck, 2013, p. 140). The result is that Wikipedia reflects a "popular history poetics," rather than critical professional scholarship (Rosenzweig, 2006). This leaves very little space for a reflective understanding of the LSH collection.

However, when LSH data is unleashed, opportunities for multiple interpretations increase. For instance, data from the LSH collection is included in the online collection of the Unstraight Museum. The overarching context here is identity politics and critique of heteronormativity. Unstraight Museum is a nonprofit organisation initiated and run by activists at Swedish museums. The aim is to run Unstraight Museum as a website with a constantly evolving bank of memories created by members of the LGBTQI communities (Axelsson & Åkerö, 2016).

At first sight, LSH partnership with Wikimedia places its collection within the realm of public education and outside the realm of the commercial. Following van Dijck, Wikimedia may be perceived as an umbrella for the biggest non-market, peer-produced, public-value-led platforms on the net. But, this is not the whole story: the popularity of Wikipedia relies on its compatibility with big commercial players such as Google. The two systems are mutually dependent: "Google's reliability as a search engine indisputably benefits from being associated with Wikipedia's neutral and impartial content, boosting the search engine's image. Mutatis mutandis, Wikipedia profits from increased traffic volumes" (van Dijck, 2013, p. 151). This alliance is crucial for understanding the lure of Wikimedia for museum agencies like LSH. When metadata links LSH data to Wikipedia, its collection gets a free ticket into one of the most powerful search engines on the Internet.

Entering a culture of consumption

In contrast to LSH's text-based interface, Rijksmuseum's Rijksstudio offers a discovery-based interface influenced by the contemporary visual culture of mobile phones and social media. Rijksmuseum's initiative has been criticised for merely offering "fancy choosing," but even so, it has set an example for museums seeking to open up their collections for all sorts of uses (Cairns & Birchall, 2013). It is a particularly interesting case due to the fact that it has consciously taken the step into a consumer- and market-driven approach to heritage (Cairns & Birchall, 2013).

The Australian scholar and museum practitioner Mitchell Whitelaw suggests that interfaces are critical for opening up collection databases, especially for audiences approaching a collection without a specific query. For him, Rijksstudio is an example of a generous interface that grants the visitor the possibility of oscillating between overview and immersion in details. However, Whitelaw states that, no matter how designers and programmers opt for generosity in terms of making as many items as possible visible, interfaces both include and exclude. Therefore, generous interfaces rely on curation. As pointed out by van Dijck, interfaces are areas of control. They are operated by protocols that steer connections between user and content (van Dijck, 2013, p. 31).

When Rijksmuseum in Amsterdam developed the interface for Rijksstudio, the audience's visual experience was paramount. The Bank Giro Lottery, a national cultural lottery, sponsored the project. Pinterest was pinpointed as a model, and the interface was designed and programmed for the potentials of touchscreen control offered by apps and Apple. At its launch in 2013, one of Rijksstudio's developers introduced it as the younger brother of the main museum, presenting 125,000 high resolution images (Gorgels, 2013). New items are constantly being added from the collection, so that in 2017 the open collection contained more than 600,000 items ("Rijksstudio," n.d.).

Rijksstudio has at least three entry points, each addressing a particular type of audience. One entrance is text-based and invites the visitor to query the full database, encompassing the entirety of Rijksmuseum's collection of art and cultural historical objects. This alternative addresses the visitor as an expert or connoisseur. The second entry worth highlighting is the "Mastermatcher." Here the visitor is addressed in terms of lifestyle and taste. He or she is invited to respond to a set of default options, and computational processes select a group of works or items ("Mastermatcher," n.d.). The third option is the most elaborate and the one the visitor first meets when entering Rijksstudio. The designated audience type for this feature, as well as for the "Mastermatcher," is what the developers of Rijksstudio labelled the "culture snacker." Martijn Pronk, head of publishing at the Rijksmuseum, stated in an interview:

> The "culture snacker" we focus on is the typical Internet user of today, pinning on Pinterest, watching videos, sharing photos. Interested in art, design, travel, but not an art lover per se. Rijksstudio is the "translation" of a museum website for this group. (Gullström, n.d.)

It might be worthwhile to consider the implicit meanings in the expression "culture snacker." A snack, a quick meal in between main meals, is seldom something that one makes an effort with. Since it has to do with food, it might also be associated to the etymological roots of the word consumption, to consume, to eat or use up. This choice of metaphor for Rijksstudio's preferred audience thus suggests that art and cultural history today feed into a culture of consumption and that items in the collection have potential as consumer goods.

This interpretation is supported by the instructions Rijksstudio provides for its users. As in the case with LSH's "Open Archive Project," Rijksstudio contributes to the open content movement which confers ownership to humanity rather than to an individual proprietor, an institution or a state. However, Rijksstudio only publishes images of objects older than 70 years whose copyright has expired or when permission has been secured from the copyright holder(s) ("Copyright FAQ," n.d.).

In terms of access, Rijksmuseum goes further than most institutions. It not only allows visitors to download and share their favourite artworks; it also permits cropping and saving just a piece of it. You can have a snack. Rijksstudio also provides instructions for visitors on how to design one's own "masterpiece" out of an assemblage of several artworks or photos. This creative practice is promoted by an annual competition organised by Rijksstudio. Furthermore, Rijksstudio offers individual users the possibility of ordering a canvas of an art piece and invites laypersons as well as professional designers to produce new consumer goods:

> From T-shirts to tableware, and from wallpaper to scooters, anything is possible using Rijksstudio. Take inspiration from other people's creations, roll up your sleeves and create a masterpiece of your very own! ("From shirts to scooters … tips and examples," n.d.)

In this case, the Rijksstudio taps into the values of the creative industries, as it clearly connects to the realm of the production and distribution of cultural commodities. This might appear as a new position for a museum, but, as emphasised by the Australian museum scholar Andrea Witcomb, the international world fairs in the 19th century and the creation of public museums were both parts of a popular culture of visual pleasure and consumption (Witcomb, 2003). For example, one of the purposes of the Victoria and Albert Museum was to support the taste and knowledge of the manufacture of commercial products. This particular museum was also funded by some of the profits from the Great Exhibition in London in 1851 (Watson & Sawyer, 2011, p. 109). When museums today engage with everyday objects, they rely on this inheritance as well as on a ubiquitous intertwining of consumption and identity creation (Knell, 2007).

Machine-assisted curation

A comparison with Pinterest may lead the way into a more elaborate discussion on how Rijksstudio addresses its audience and its ideal modes of engagement. Pinterest is an image-based social networking site where users "pin" content on themed personal "boards." One can pin images of one's own as well as images found on other websites. The way the site is used emphasises individuality and customisation (Lui, 2015). The owners market Pinterest as a "catalogue of ideas," that is, a site on which one can look for information and inspiration in areas such as home decoration, cooking and travel ("About," n.d.). Both private persons and companies are allowed to create boards, and a great deal of the content on Pinterest is retail products, blurring the boundaries between individual creativity and consumption (Lui, 2015). Launched in 2010, in 2017 the company webpage states that the amount of users is still growing ("175 million people," n.d.).

Communication scholar Debora Lui suggests that Pinterest involves its user in a particular mix of public and private collecting. Pinterest displays strong impetus for users to customise the site to express personal taste and identity. However, the platform's constantly changing grid of images is shaped in an interplay between categories suggested by the technological structures of the site and the activities of the individual user. Pinterest is programmed to direct the user to themes and styles similar to those one has previously clicked on or pinned; these in turn are dependent on already existing categories. According to Lui, the founders of Pinterest closely monitored the initial collection of images brought into the database, and these still form the basis of the platform's content. The result is, writes Lui, that "it is easy to create and populate boards that already follow to existing categories ('Home Décor,' 'Art'), but more difficult to maintain navigational searches that conform to alternate categorizations" (Lui, 2015, p. 136).

One crucial difference between Pinterest and Rijksstudio is that Pinterest is part of the ecosystem of social media, in which metadata about user's behaviour are exploited by the owners of the platforms (cf. Lui, 2015; van Dijck, 2013). Rijksstudio is not part of that system but encourages its visitors to share via social media. Buttons for Facebook, Twitter and Pinterest appear on the site, but it seems, as in the case of Pinterest, that social sharing comes second to the creation of personal collections (cf. Lui, 2015).

Like Pinterest, Rijksstudio encourages the creation of personal collections and presents its visitor with a flow of images curated into themes. At first, the visitor meets a row of preset categories, such as "Highlights from the collection," "Artists," "Styles," "Dutch history" or "Subjects" (e.g. birds). Scrolling further down, the visitor is presented to both individual works and "sets" of three items, grouped under a common theme. "Sets" are curated by Rijksstudio as well as by individual visitors.

At the top of the page "Explore Rijksstudio," the visitor is invited to sign in, either via Facebook or email, and create one's own collection of masterpieces. The hidden layers of technology behind the interface then include these sets in the flow of images on the entry page. The default preference is that individual sets become public by means of protocols that include them in the flow. In order to keep a set private, one has to edit one's collection.

Rijksstudio still complies with an educational and authoritative voice. In line with a logic of collection and display, a selected number of items represents a wider category (cf. Knell, 2007, p. 12). Clicking on one of these "sets" takes the visitor to additional works included in the same set, and computational processes sometimes recommend the visitor associated "sets." When the user clicks on an image to include it in a "set," the interface displays catalogue information and associated images. This information varies among objects, but generally, it is based on curatorial expertise, for example, information on works by the same artist or school. But the interface also addresses aesthetics, as it offers the user the possibility to search for works in similar colour tones. As pointed out by Simon Knell with regard to photos and drawings in collection registers, focusing colours or elements of style seems to adhere to subjective sensitivities. Therefore, aesthetical qualities and personal taste are means of complementing the classificatory grids derived from museum disciplines (Knell, 2007).

The way in which computational processes mix "sets" created by Rijksstudio with "sets" created by individuals in the audience gives the impression of shared curatorial agency. However, as Debora Lui's analysis of Pinterest suggests, the entrance page and presentation of existing "sets" highly encourage users of Rijksstudio to mimic other pre-existing "sets" when customising their own collections. Other "sets" thus work as conceptual affordances for users to define their own taste and interests. In terms of subjects and themes, some "sets" resemble Pinterest's bias towards aesthetics and decoration, as described by Lui (2015); others seem to mirror the value and the identity of the museum itself, such as the Dutch golden age, its painters, masterpieces and cultural history.

This is not the place to delve into the long and complicated history of Rijksmuseum. Suffice it to say, when Rijksmuseum reopened in a new building in 1885 it brought together several collections that were considered to be of importance for the history of the Netherlands. Among them was King Louis Napoleon's collection from the beginning of the 19th century that included one of the most famous items in Rijksmuseum's collection, "The nightwatch" by Rembrandt. In her history of the national museums in the Netherlands, Felicity Bodenstein points to the fact that, even though Rijksmuseum is renowned for its masterpieces, it was initially considered to be a history museum rather than an art museum. She suggests that this is partly due to the fact that the painters from the Dutch Golden Age were admired for their depictions of everyday life (Bodenstein, 2011).

In combination with computational processes, what the curatorial selection of items and themes seems to be able to do is to reinvent this heritage for a digital culture of creative consumption. Still life paintings, landscapes and portraits from the Golden Age are considered home décor as well as popular history. Furthermore, the visitor can mimic the art collector and connoisseur or turn into an artist and produce masterpieces.

Curatorial agency in future

The examples of LSH and Rijksstudio highlight some of the values, technologies and collaborations involved in creating new modes of audience engagement. Although open collections, metadata and protocols facilitate new modes of audience engagement, the agency of display has not necessarily been reformed in its entirety. Museum curators still shape knowledge in new machine-assisted modes of curating. While the reinvention of online collection databases that depend on text-based search relies on the interpretative frameworks provided by data and metadata, discovery-based search models are dependent on themes and categories suggested by museum staff involved in designing interfaces.

The way in which LSH presents the reinvention of their online collection allows for looking into how the museums' internal values interact with cultural policies and how they play out when a museum buys into the alliance between Wikimedia and Google, that is, between nonprofit driven peer-production and corporate values. LSH collaborated with multiple agents external to the museum, and the collection items are available in several interfaces, such as Kringla and Europeana, run by public agencies, as well as Wikipedia and Wikimedia Commons, run by a foundation. The reinvention of the online collection database was thus dependent on knowledge-power configurations external to the museum. The agency of display here seems distributed between the different competencies in the museum's digital unit; external collaborator's standards for metadata and connections between metadata and APIs; and the audience knowledge of the vocabularies in the data and metadata. The asymmetry between laypersons and museum professionals in knowledge of the collection is balanced by the ways in which metadata is adapted to several protocols. Some of these protocols are exposed to scrutiny when the public agency LSH shares them online.

When reinventing their online databases, both LSH and Rijksmuseum tapped into the open content movement. When turning collection items into data, LSH produced high-resolution images of objects and artworks and licensed them for the Creative Commons. This was possible due to the fact that copyrights have expired for most of their collection items. Rijksmuseum, which possesses a much larger collection, with newer works as well, had to select which items to include in Rijksstudio; hence they had to curate this collection. The selection of works and the themes framing them seem to rely on copyright restrictions. The choices are also firmly based in the identity of the museum as a keeper of masterpieces of fine art and especially national schools of painting. This conclusion points to the need to locate curatorial agency in copyright issues as well as institutional histories in order to look into how museum-specific values are reinvented for new modes of audience engagement.

Rijksstudio's interface gives the impression of sharing curatorial agency between the museum and the audience. Nonetheless, the themes and categories the site presents for its visitors inevitably frame how audiences select art works and objects when they set out to curate their collections. This asymmetry in curatorial agency seems even more poignant if the analysis takes into account the impact of computational processes and how they steer the flow of collections displayed by the interface and suggest associated works. A key question for scholars interested in studying this machine-assisted curating is how algorithms and protocols interact with human curatorial agency. For the general visitor, not savvy in codes and calculations, the machine's intervention remains hidden. However, as in the case of LSH, Rijksstudio's API is available online for reuse under specified conditions ("Rijksmuseum API," n.d.). The ways in which these conditions are framed suggest that openness is part of the current rebranding of the museum as described above. This, in turn, connects to how museums today respond to the pressure and effects of consumer markets. Rijksstudio was created for a culture of individual consumption and creativity, and the implications of this for the way in which audiences engage with the collection demands further investigation in terms of how the cultural values of the collections are transformed and negotiated in online spaces outside of museum control.

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1.5
Visitor and audience research in museums

Susan Anderson

On January 21, 2013, the Dallas Museum of Art (DMA), United States, launched DMA Friends (a free membership programme) to coincide with the Museum's return to free entry. The programme bore similarity to loyalty and affiliate programmes used in other sectors to reward patrons for their engagement with the museum (Stein & Wyman, 2014). Visitors to the museum were invited to join the programme and to log their activities within the museum via codes typed into iPads or sent by text message. Activities logged include participation in educational programmes and visitation to galleries and other museum spaces. In doing so, the visitor accrued points, which were redeemable for rewards such as free parking and discounts in the shop, and badges. In its first two years, DMA Friends enrolled more than 100,000 members, with 97.1% of DMA Friends "self-identifying as new members at the Museum" (Dallas Museum of Art, 2015).

Although the programme was sunsetted in December, 2017, DMA Friends was designed to enable transparent and ongoing monitoring of visitors' long-term engagement with the museum (Stein & Wyman, 2014). The technologically-enabled, data-driven approach to visitor engagement sought to facilitate increased understanding of the museum's visitors at a scale far greater than possible in surveys and other common forms of visitor research. This aspiration responds to one of the most persistent challenges facing museums today – how to understand, measure and respond to visitor behaviour and expectations. The quantitative data collected about individual visitors included basic demographic data such as zip code, as well as information about visitation frequency and the educational programming and gallery and non-gallery spaces that the visitor utilised. By collecting and aggregating data on the activities of thousands of individual members, DMA Friends allowed the museum to better track how its visitors interacted with the institution. Additionally, by assigning individual members with a personalised account, it also offered insight into the individual preferences of visitors (Stein & Wyman, 2014). This data could be used in museum planning and visitor development, shaping how the museum conceived of and categorised its visitors, and therefore, it could programme, plan for and relate to them.

Digital technologies in museums are increasingly seen as "vital in the race to 'prove' public worth, impact, accountability and relevance" (Kidd, 2014, p. 2). Platforms such as DMA Friends, and technologies including location-aware proximity sensors and personalised mobile devices, have facilitated the gathering of new types of data about visitor behaviour at scale, including their consumption of museum content onsite and their movements throughout the museum. At the same time, online audiences have become more measurable and quantifiable, prompting museums to consider what these digital audiences mean to them and how they are included within the business and economic strategies of the institution. This does not undermine traditional quantitative or qualitative approaches for researching the audience so much as open new avenues for conceptualising audiences. Lynda Kelly has argued that although traditional methods for evaluating museum programmes remain useful and necessary, the sector needs to utilise new methods and strategies (Kelly, 2004). The use of new technologies within these processes is increasingly important for reconceptualising museum visitors and audiences, particularly as media becomes more firmly woven into people's lives and museum experiences.

The turn towards visitors and audiences

The impulse to understand, and react to, visitor behaviour has been one of the great driving forces within museums since the mid-20th century. In that time, the museum has become progressively visitor-centric (Hooper-Greenhill, 2006; Rodney, 2015), responding to a decline of public funding for museums (Hooper-Greenhill, 2005), increased competition for funding and visitor time (Ballantyne & Uzzell, 2011) and pressure to mount a compelling case that tangible and meaningful benefit results from investing in the arts and culture. The abundance of goods and services, to the point that supply exceeds demand, have further driven museums towards increased customisation of experiences for the needs and interests of individuals (Falk, Dierking, & Adams, 2006). As such, museums have become increasingly focussed on researching visitor needs, motivations and behaviours.

For a long time, visitor research in museums was focussed primarily on those who attended in the museum in person. In the 1980s and 1990s, however, visitor research expanded to include all those who *might* come to the museum (Hooper-Greenhill, 2005, p. 2). Researchers such as Marilyn G. Hood began to examine why people choose not to visit museums (Hood, 1983). She utilised psychographic profiling to show that people make choices about how to use their leisure time based on their values and the perceived benefits of attending museums. At around the same time, new methods for visitor research, such as systematic observation of visitor behaviour in the museum environment, began to reach broad acceptance within the sector (Tröndle, Greenwood, Kirchberg, & Tschacher, 2012, p. 103). In response, visitor research began to focus on audience needs and individualised experiences.

Frequently, the study and analysis of museum visitors has fallen under the purview of market research, which seeks to provide quantitative information about the demographics, psychographics, interests, socioeconomics and geography of current and potential audiences. This research is utilised by museums for both interpretative and business plan development, informing choices related to issues including staffing, marketing expenditure and the timing and funding of events (Black, 2005, p. 12–13). The term "visitor studies" is also used, encompassing research into visitor motivations, needs, behaviours and expectations, their social composition and exhibition-going habits and judgements and the takeaways or benefits gained from attending the museum.

In recent years, the conceptualisation of museum visitation has evolved to reflect the growth of website users and social media followers. The museum's "audiences" now include all those who interact with the institution online, onsite and remotely – including those who may not explicitly seek out the museum's content but interact with it regardless. Museum audiences are now imagined and understood through a broad matrix of perspectives that includes multiple avenues for interacting with the museum. Lynda Kelly recently analysed nearly 20 years' worth of work addressing museum audience studies with a focus on online behaviours, user-testing and trend analysis to reimagine the (post) digital museum visitor. She determined that:

> the focus now needs to shift to creating strong synergies between the physical, online, and mobile experiences, while understanding how audiences are interacting, behaving, and learning across these three spheres. (2016, n.p.)

Museum audience studies incorporate both quantitative and qualitative methods and are frequently utilised for audience development. Not merely about increasing the size of a museum's visitorship, "audience development" is a deliberate strategy aimed at cultivating new audiences, usually with a focus on those previously under-represented at the museum (Black, 2005, p. 47). Gloria Romanello (2013) notes that the term has a broad range of meanings, often speaking to "a certain democratizing intent and a strong participatory spirit" (Romanello, 2013, p. 62).

Audience development, with its focus on participatory experiences, has become a growing concern within the sector. The term "participatory culture" first entered the lexicon in 1992, when Henry Jenkins described fandom as a form of social exchange (Jenkins, Ito, & boyd, 2016). Participatory cultures were understood to embrace the values of diversity and democracy and assumed that all members of a group could, together and individually, make decisions and express themselves through a range of different forms and practices. A contemporary definition proposes that:

> A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experiences is passed along to novices. A participatory culture is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the least they care about what other people think about what they have created). (Jenkins et al., 2016, p. 4)

This notion of participatory culture was initially vaunted as a means for reallocating power away from organisations and institutions that previously controlled distribution of information towards those who had been marginalised. These ideas first entered the museum in the 1990s, under the influence of younger staff who valued the museum as an open and democratic institution, who began to focus more specifically on the needs of audiences (Hooper-Greenhill, 2005, p. 5). The introduction of Web 2.0 or the "Social Web," typified by social media platforms such as Facebook, Twitter and blogs, in the mid-2000s led to a further embrace of the concept in response to an influx of potential and actual new participants in the consumption and creation of content. By lowering the technical barriers to entry, the Social Web made it easier for people outside formal institutions to create and publish their own work. Many people who had never had the public capacity to share their thoughts with large-scale media companies, governments or media organisations gained a public voice. Doing so reframed concepts of participation and publicness, bringing with it new opportunities for people who had previously been without the capacity to create public identities for themselves, generating unprecedented "moderate, widespread publicness" (Baym & boyd, 2012, p. 321). People became audiences to one another in new ways, and institutions became audiences to "the people formerly known as the audience" (Rosen, 2006). Together, these changes have prompted broad changes in the ways that people communicate and interact with one another, and with organisations and institutions.

While the ideals of participatory culture have been enthusiastically embraced by many in the museum sector (see Simon, 2010), they have also prompted significant questions about the relationship between the museum and its audiences (Stein, 2012). Perhaps at the heart of this critical questioning are concerns about the museum's authority, in a context where its voice, value and meaning could be openly and publicly questioned. As Robert Stein (2012, p. 219) asked, in a callback to earlier work by Stephen Weil, "why is your community better off because it has a museum?" Questions such as this, which seek to ensure that museum work is focussed on the people it serves, rather than merely on its role as custodian on objects and history, have further contributed to both a turn towards the visitor, and a mounting urge to measure and account for the museum's impact, prompting new kinds of audience measurement and visitor research.

To understand the affordances and challenges of digitally-enabled audience research, it is important to understand the broader context of visitor research within museums and its connections to audience research beyond the sector.

Early evolutions of visitor research in museums

Although the earliest research into museum visitors was undertaken in the late 19th century (Hooper-Greenhill, 2005; Kelly, 2016), visitor studies within the sector became more commonplace from the 1960s onwards (Hooper-Greenhill, 2005, p. 3). In early studies, museum staff conducted small surveys of visitor demographic data, measuring a limited range of visitor characteristics and rarely comparing the demographics of museum attendees with the demographics of the local population. It was not long before the sector began drawing upon models and methodologies from the fields of market research, evaluation and ethnography, including visitor observation, interviews and surveys (Pekarik, 2011). Literature informing the field included sociology, psychology, leisure science, education, communications, consumer behaviour and marketing (Hood, 1993). In 1987, Abigail Housen laid out three methods for studying museum audiences, based on an in-house study at the ICA Boston, being demographic studies, attitudinal studies and developmental studies, which focussed on visitor logic, comprehension and motivation. In sharing her results, Housen identified a problem that has been well recognised since – that museum visitors do not share common needs, interests, or understandings – and called for researchers to devise new measurement tools that can elicit difference (Housen, 1987).

Two fields that were influential upon those seeking new approaches to visitor studies in museums were those of leisure and communications (Hood, 1993). As Hood notes, leisure studies became prominent as shorter work weeks, longer vacations and the eight-hour day came to dominate labour markets, prompting examination of what people chose to do outside of work. A core idea to emerge from this area of research was the notion that people could choose to come to museums or not, and that if the visit was of little value, they could seek to do other things with their time. Since then, processes related to consumer choice have often been studied in the context of visitor motivation, lifestyle segmentation, and the visitor lifecycle. For instance, Christine Burton, Jordan Louviere and Louise Young studied the value of choice modelling, which seeks to model decision processes of individuals or market segments within specific contexts or to identify specific features and incentives, such as bundled visitor packages, that matter to cultural consumers (Burton, Louviere, & Young, 2008). They propose that, in seeking to develop their visitor appeal, museums must consider specific incentives, such as discounts for repeat visits, as essential elements in leisure marketing strategies.

Hood proposes that museums also benefitted from communications research, which provided them with information about how people receive and act on different kinds of messaging (Hood, 1993). Of significance to the museum sector was research into diffusion and personal influence, or the study of primary and secondary reference groups or influencers and their role in persuading non-museum-going publics to attend. The study of persuasion has been significant to the history of media and communication studies (Ross & Nightingale, 2003), and it is perhaps unsurprising that this area of research has had an influence on the museum sector. Eilean Hooper-Greenhill has characterised museums as a form of "mass communication media" (Hooper-Greenhill, 2005, p. 6), whose communication takes place via exhibitions, publications, advertisements and methods such as videos. Today, in the digital age, media convergence has ensured that much museum communication also now takes place online, via websites and social media platforms, immediately placing the museum in the same communication space as other forms of media. Indeed, museums are increasingly acting *as* media organisations, creating content for digital and online channels, publishing books and magazines, making games, radio series and podcasts, in addition to in-gallery interactive media (Kidd, 2014). At the same time, techniques for measuring museum audiences – particularly those that draw influence from the affordances of digital technologies – have become informed by approaches to the measurement of media and online audiences.

Audiences in media and communication research

In media and communications studies, the term "audience" can indicate an individual or group of people with or without prior connection beyond a shared interest in media (channels and content), or it can refer to groups with stronger socio-cultural ties, such as those shared by subcultures, fan cultures or ethnic diasporas (Ross & Nightingale, 2003). These latter groups may share common interpretive perspectives not found in other audiences, and may exist beyond their interaction with a media event or project. Small, place-based groups such as attendees at a play or poetry reading can also be considered audiences. Karen Ross and Virginia Nightingale propose that:

> *being an audience* has to involve more than just being in a group of people … being part of an audience means being part of a media event, where people engage with mediated information. People *are* audiences when they are *in an audience* and *in audience*. (2003, pp. 5–6)

Media audiences are often understood in juxtaposition against the broader concept of "publics," wherein publics are understood as active, critically engaged and politically significant, and audiences as trivial, passive and individualised (Livingstone, 2005). Sonia Livingstone challenges this view, arguing that in an increasingly mediated society, there is a complex and ambiguous relationship between audiences and publics. Similarly, Richard Butsch and Livingstone describe the importance of understanding how audiences are discussed and characterised as integrally linked to "politics and citizenship, economics and prosperity, education and cultural improvement, morality and family life" (Butsch & Livingstone, 2014, p. 1). In other words, the examination of, and naming of, audiences is always a political act. This is similarly true within the museum.

Harold Lasswell's "chain of communication" theory ("who says what in which channel to whom with what effect?", Lasswell, 1948) is among the most influential early theories of media audiences in the 1940s and 1950s and posited that the audience was a receiver of media in a kind of transmission mode, with information that flowed in a singular direction from sender to receiver, with effects that could be identified and replicated as they were passed on from person to person (Laughey, 2007).

For a long time, museum audiences, too, were understood as recipients of the museum's messages in a kind of transmission mode. In *The educational role of the museum*, Hooper-Greenhill explored the evolution of communication theory for its parallels to the museum exhibition as a communicative device. She drew attention to the Shannon and Weaver Model of communication, developed in 1948, in which communication is described as a process that includes a source, a transmitter, a channel, a receiver, a destination and noise, which is anything that might interrupt the transfer of information. She writes:

> It is possible to describe the exhibition team as the source, the exhibition as the transmitter, with objects, texts and events as the channel of communication, the visitors' heads as the receivers, with the visitors' understanding as the final destination. In this instance the "noise" which interferes with the message might include anything from crowds to visitor fatigue, or workmen in the gallery next door. (1999, p. 32)

It is interesting to observe that Hooper-Greenhill was here applying an already dated paradigm from communication research to museum studies. The problems of such simplistic models of communication were already beginning to unravel by the 1950s. At that time, Elihu Katz and Paul Lazarsfeld began to study how people could shape the flow of mass media messages. They conducted small group survey research into interpersonal communications in rural America around media communications, examining variables such as exposure, medium, content and the attitudes and predispositions of the audience that intervened between the masses and the mass media (Ross & Nightingale, 2003, p. 27). They found that rather than merely repeating messages heard or read in mass media, per Lasswell's chain of communication theory, participants began to shape the messages they heard as they passed them along. This led to a model known as the "two-step flow," in which ideas were understood to flow from media such as radio and print to opinion leaders in a society, who dispersed them to other members of the community.

The first approach to audience studies that championed the notion of the "active audience" emerged in the form of "uses and gratifications theory" (Katz, Blumer, & Gurevitch, 1973–1974). Here, audiences were seen as actively selecting the media which they deemed most likely to gratify their needs. Uses and gratifications research assumed that "audiences use media – not vice versa" (Laughey, 2007, p. 26). In other words, someone might consume the news to stay informed, or watch a comedy to wind down, meeting needs that they already have, rather than having those needs created and imposed by the media itself. Although it has been criticised for subscribing to a "rational choice" theory of media behaviour according to which people deliberately and consciously choose the best media for fulfilling their needs, and ignoring both the interpretive work of audiences "reading" media texts (Fiske & Hartley, 1978) and the larger social structures and divisions that shape individuals' routinised media consumption (Hooper-Greenhill, 1994), uses and gratifications theory was a turning point away from theories of media effects. It turned away from the idea that media does something to people and considered instead what people do with media (Ross & Nightingale, 2003, p. 31). As such ideas developed, the next paradigm of audience research – reception research – began to further incorporate qualitative interview-based or ethnographic methods alongside quantitative methods, as it was increasingly recognised that audiences pick up a plurality of meanings from texts and media, and that cultural context informs their experiences and interpretations (Livingstone, 1998).

Media reception analysis emerged in the years around 1980 as a critical reaction against both the "effects" tradition and uses and gratifications research. Being interested in what people do with the media, it shared the knowledge interest of uses and gratifications research, but it distanced itself from its psychological functionalism and instead adopted a combined phenomenological and hermeneutic perspective on audience activity: audiences were here seen in their capacity of sense-making humans who negotiate mediated meanings according to the communicative repertoires they have acquired over the life course through situationally and contextually anchored encounters and negotiations with other people in the networks of everyday life. Founded by the Jamaican-British cultural theorist Stuart Hall (1973), reception research was developed as an integral part of the critical cultural studies paradigm. The practical operationalisation of the theory was especially indebted to cultural sociologist David Morley, who applied the theory in an analysis of British citizens' readings and understandings of the BBC current affairs programme "Nationwide."

Early reception research was mainly interested in understanding the political and ideological dimensions of media experiences (Schrøder, 2013). Media institutions – irrespective of their status as private or public service media – were seen to offer audiences/viewers meanings that were loaded ideologically in favour of ruling elites: it was then the task of reception analysis to examine whether the audience accepted this "preferred meaning" (a dominant reading), or whether they to a greater or lesser extent resisted this meaning, either through a "negotiated meaning" that shared the essence of the preferred meaning, or through an "oppositional reading" that rejected the preferred meaning entirely. Succeeding generations of reception research, however, relieved their analytical practice of the ideological component, and the three-readings typology became a plausible general categorisation of media readings. For several decades, reception research explored the encounter between media as texts and audiences situated in daily life, following different cultural agendas: One important strand sought to understand media reception as a gendered practice, analysing audience readings of romance novels (Radway, 1984), emotional engagement with primetime soap opera (Ang, 1985), or the pleasures women derived from glossy magazines (Hermes, 1995). Other researchers put the spotlight on audience sense-making around ethnic media content (Jhally & Lewis, 1992; Dhoest, 2009). As the media ecology grew increasingly complex with the advent of digital and social media, the analytical glance was extended from studying the media text/audience nexus towards understanding how audiences navigated in and made sense of the media landscape as a whole, as reflected in this recent redefinition of reception research in the age of convergence and cross-media:

> The scope of reception research encompasses all forms of research which, irrespective of methodological approach, seek to understand all audience sense-making processes around media, without privileging people's receptive interpretation of concrete media products. (Schrøder, 2016, n.p.)

As mixed methods have also become the new normal in reception research (Greene, 2007; Schrøder, 2012), this wider knowledge interest has manifested itself, for instance, in studies of how audiences-as-participants make sense of fictional story worlds across media (Jenkins, 2006), how news audiences build cross-media news repertoires from the media manifold they inhabit (Swart, Pieters, & Brorsma, 2016), or how the use of one's Facebook newsfeed can be seen as inherently a cross-media experience (Mathieu & Pavlíčková, 2017). As the tracking of audiences' and users' digital footprints is added to the analytical toolbox, reception researchers are insisting that such "big data" does not speak for itself, but needs to be contextualised in comprehensive mixed-method designs, where verbalised accounts illuminate the overall sense-making process (Thorhauge & Lomborg, 2016; Breiter & Hepp, 2018).

Museum visitors and audiences in the digital age

Similar ideas rose to prominence within the museum in the 1980s and 1990s. As in the area of media reception research, the influence of critical theory and postmodernism, structuralism, anthropology and intertextual cross-fertilisations saw the role of the producers and receivers of knowledge decentralised (Mayer, 2005). Visitors and audiences were now to be understood as more than passive receivers of texts and information provided by the museum, but rather as active participants in the construction of knowledge. Around the same time, museum education departments increased their emphasis on incorporating "free-choice learning" opportunities within leisure activities (Falk et al., 2006), particularly influenced by the work of John Falk and Lynn Dierking, who systematically examined the museum visit to learn the circumstances that lead to learning. These authors examined the visitor experience before, during and following the visit to explore the range of situational and contextual influences on a visitor's experience with the institution. They proposed that visitor experiences can only be understood by studying the connection between three contexts – being the personal, social and physical (Falk & Dierking, 1992).

More recently, Falk has described five categories of visitors based on their identity needs and motivations when attending museums: Explorers, who are motivated by curiosity; Facilitators, who seek to enable learning and enjoyment in others; Experience Seekers, who want to see and experience a place, often looking for the known and iconic; Professionals and Hobbyists, in which the visit helps meet a professional goal or purpose; and Rechargers, for whom the museum is a place of respite. These identities are not fixed. They can change between visits and even during a visit (Falk et al., 2006). Similarly, James B. Schreiber and colleagues from the Smithsonian Institution's Office of Policy and Analysis described a model of experience preference with the intent of reframing audience diversity. The IPOP model describes four key dimensions of experience: Ideas (conceptual, abstract thinking); People (emotional connections); Objects (visual language and aesthetics); and Physical Experiences (somatic sensations) that inform museum preferences (Schreiber, Pekarik, Hanemann, & Doering, 2013). It is intended for use by exhibition designers and content creators, such as those in education or marketing, to create experiences that appeal to and meet the needs of the different preferences of visitors.

Models of visitor engagement, such as that created by Falk and Dierking, are useful for museums seeking to understand and categorise their visitors, to create more focussed and personalised approaches to the museum experience. However, it is important to realise that the ways that museums conceptualise their audiences do not necessarily reflect reality. Much like media audiences, museum audiences exist, as Ang (1991) describes, as both a discursive construct and as an "actual audience," composed of individuals, each of whom has their own motivations and needs, desires and interests, backgrounds and identities. This creates a "theoretical distinction between two realities" (p. 13), in which the audience, conceived within and by the institution, measured and named, is assigned characteristics and values that may or may not reflect the reality of those individuals that compose it. In other words, as Raymond Williams put it, "there are in fact no masses, but only ways of seeing people as masses" (Williams, 2013, p. 10). The creation of target markets or research groups creates frameworks through which the museum can visualise or imagine its audiences, but those frameworks are necessarily artificial and imposed. In work on the evolution of media audiences, Philip M. Napoli proposed that:

> the *institutionalized audience* is a very malleable construct; something that evolves in response to environmental conditions in order to facilitate the continued functioning of the audience marketplace. (Napoli, 2008, p. 50)

Therefore, in the 1980s and 1990s, media and museum scholars alike began to argue against the concept of a unified audience. Industry conceptions of the audience turned towards the difficulty in knowing the audience, as it was acknowledged that professional mass communicators knew their audiences only in abstract, with fleeting insight beyond. Data collected through technological mechanisms such as audiometers and people meters were thought to be more accurate, reliable, representative and timely than samples that relied on diaries and coincidental surveys. However, even as these technologies promised greater insight into individual media preferences, the media landscape was developing and diverging, prompting "an ever-growing tension between the elusiveness of the audiences and the eagerness of audience producers to measure it" (Bermejo, 2009, p. 141).

The rise of networked and digital technologies as the "communication fabric" (Castells, 2009) of society intensified shifts towards a "network society" (van Dijk, 2005), and exacerbated concerns about audience fragmentation. The emergent media environment that accompanied the rise of digital technologies has resulted in media being woven into people's lives in increasingly complex ways. Technologies such as mobile devices have given people increased choice over how and when they access and consume information and media. Fernando Bermejo documents the challenge that online audiences created both for advertisers and for others wishing to understand, monitor and influence audience behaviour. He describes how, in 1995, the development of a generally accepted ratings system for online advertising became a priority for the advertising industry, leading to the search for a standard source of measurement (Bermejo, 2009). Bermejo also notes that this process was not successful, likely because of the variation amongst the methodological approaches that have been taken in response to the technological and usage affordances of the Internet (Bermejo, 2009, p. 143).

One of the most important aspects of the Internet and digital technologies is their ability to record the traces of actions. It is this feature of online activity that has proved so revolutionary for the study of both media and museum audiences and led to what has become known as the "era of big data" (boyd & Crawford, 2011) – explored more fully later in this volume in the chapter by Lauren Vargas. This has dramatically increased the scale at which data can be collected, curated and examined – often algorithmically. Big data is particularly notable for the ease with which it can be correlated with other data (boyd & Crawford, 2011). Because it is fundamentally networked, such data offers researchers huge capacity to mine it for patterns and insights about people and their relationships, how different data relate to one another, and the structure of information itself. This means that aspects of audience behaviour and interaction can be measured, aggregated and analysed at a scale and in ways not previously possible. This has made possible new kinds of personalised, targeted research into human behaviour.

It was only relatively recently that the traces of human actions have become personalised and linked to individual accounts, however. Companies such as Facebook track the actions and behaviours of individual users to package them back to advertisers for targeted and personalised marketing. The collection and aggregation of personalised data about buying and interaction behaviours, linked to an individual's account, gives companies huge opportunities for insight into their behaviours, to better target them and provide enriched and personalised experiences. Such practices also bring concerns about privacy and user data that are beyond the scope of this paper to address in detail. However, companies and organisations are now better able to understand the needs and desires of their digitally-connected users, visitors or participants, to better deliver them experiences and products that will suit their needs.

This can present a challenge for audience researchers outside those organisations. As Jonathan Gray (2016) notes:

> the walling of the numeric audience by companies with large datasets, and the relative quieting of the qualitative audience in critical cultural scholarship, leave us knowing embarrassingly little about contemporary audiences. (2016, p. 81)

Additionally, there are several significant challenges associated with the turn towards big data in research. danah boyd and Kate Crawford have laid out six provocations for big data, which interrogate many of the assumptions and biases that accompany its computational culture. These include that: automating research changes the definition of knowledge; claims to objectivity and accuracy related to big data are misleading; bigger data are not always better data; not all data are equivalent; accessible data is not necessarily always ethical; and that limited access to big data creates new digital divides (boyd & Crawford, 2011), in part because much of this data is collected and controlled by private companies. These concerns hark back to early challenges associated with establishing standardised methodologies for measuring online audiences. As Bermejo notes, analysis of data about online activities is rather complex, requiring significant cleaning and refinement before analysis can take place (Bermejo, 2009).

Seeking the forest and the trees

Despite this, it is impossible to deny that the affordances of online and digital audience measurement have had a significant impact upon contemporary research about both online and onsite audiences. Museums now seek to understand the impact of mediation devices such as mobile phones on their visitors (Jarrier & Bourgeon-Renault, 2012); how best to record, track and analyse visitor movements through the museum (Yalowitz & Bronnenkant, 2009); and how best to understand and measure the impact of all online endeavours (Finnis, Chan, & Clements, 2011).

Some of the most innovative approaches to contemporary museum practice have begun to explicitly link digitally-based research into audiences and their interactions with the museum directly to the visitor experience. Perhaps the most significant data-driven museum experience to date is that found at the Cooper Hewitt, Smithsonian Design Museum. In 2015, a newly-renovated Cooper Hewitt reopened after being closed for three years with a wholly reimagined visitor experience. At the heart of this new experience was the pen – an innovative tool that supports the visit by allowing people to collect and document their visit – including objects, exhibition text and labels (Chan & Cope, 2015). Visitors to the museum can use the pen to interact with large-scale interactive tables, explore the online collection and even create their own digital designs in response to objects and exhibitions. Following their visit, museum-goers can log onto the Cooper Hewitt's website and retrieve the data they collected whilst on site – something of which around 30% of visitors took advantage (Walter, 2016). Universally distributed to museum visitors, the pen was initially envisioned to be:

> [part of a] system-wide platform, [be] your ticket, your identity throughout the museum, how you make purchases [in the shop], making you an active visitor, getting you away from your phone and closer to design. (cited in Walter, 2016)

Significantly, by allowing the visitor to "collect" their visit, the assumption that museum visitors find their own meanings in their interactions with the museum extends to cover "the days, months and years that follow their visit" (Walter, 2016, n.p.). This gives the museum opportunities to link the pre-, during, and post-visit phases of the museum visit.

Seph Rodney has argued that there are three key means of accomplishing personalised experiences within museums:

> First, recognizing visitors' capacity to make meaning for themselves; two, partnering with them to discover what they personally want from the museum; and lastly, mobilizing the museum's resources to meet these needs. (2016, n.p.)

The Cooper Hewitt's revolutionary approach was built to enable precisely these kinds of interactions with the museum. As measurement moves into the purview of digital departments in museums, the influence of digital and online culture becomes more explicitly felt in the onsite visit. This does not necessarily take the form of more screens and visible technologies onsite (although it can), but rather, on exploration of the unique experiential aspects of the visit. In practice, the pen collects data about how visitors to the museum move around the museum and interact with the objects onsite. The actions can be understood through the lens of social media, whereby visitors "like" objects, declaring to the museum their preferences and signalling inclinations for interaction. More dimensions of visitor behaviour are made visible for investigation by the institution, creating new opportunities to understand and meet visitor needs and expectations.

What are the implications of the move to digital audience measurement?

Increasingly, museum digital and IT departments are implicated in capturing, analysing and publishing museum data about their audiences. This has several consequences. Firstly, it shifts key aspects of responsibility for the visitor experience to those departments, more firmly linking the institution's core responsibilities to its publics with digital and IT departments. Additionally, as museums measure their online and onsite audiences via digital means, they will increasingly rely on the kinds of metrics of success that such technologies make possible (Finnis et al., 2011). This will create new frameworks for measurement and understanding of the audience, which will in turn create new factors in their evaluation. By increasing the representation of, and information about, digital audiences within the overall audience profile, online and digital audiences will continue to grow in importance for institutional reporting and in concepts of the audience (Villaespesa, 2015; Stack & Villaespesa, 2015). This can change who is recognised and counted within the museum's conceptions of the audience and how the museum responds to and thinks about those audiences. It will also create or exacerbate the divides between those institutions that can capture and access this kind of information about their audiences and those who cannot.

Lynda Kelly has argued that although traditional methods for evaluating museum programmes remain useful and necessary, the sector needs to utilise new methods and strategies. She describes a critical "shift in museums from mission-led programme development to balancing content and audience needs through a transaction approach [which] requires a broader research-focused agenda" (Kelly, 2004, 45). However, moving more of the burden of measurement of audiences onto technological solutions does little to resolve the fundamental challenges of all forms of audience research: the questions of analysis and action. Who is doing what with the data? How is it being used and translated into knowledge and action? Romanello (2013) flagged this concern when considering the place and use of more traditional visitor studies in two Spanish and two French art museums, noting that data analysis rarely takes priority. Instead, collected data is often used for marketing and economics and to demonstrate a public focus that may not carry through to action (p. 71). As noted above in connection with the adoption by reception research of digital data, collecting data on visitors and their interactions with the museum is arguably meaningless without significant contextual analysis to discover what that data means (Thorhauge & Lomborg, 2016). The scale of data available for collection about visitors through automated and digital means adds a layer of complexity to this. Robert Stein recently argued:

> Now that museums are beginning to have the tools and expertise at their disposal to monitor, track, record, and analyze all the various ways that the public benefits from their work,

> the real task begins to redesign the process and program of museums and to embed impact-driven data collection into every aspect of our efforts. (2014, n.p.)

Doing so will necessarily require the museum to create new programmes, new language and communications capabilities and new responses to meet the needs of the newly conceptualised audience. Whether museums can do this, or even want to, is where some of the most significant challenges still lie.

One of the ongoing challenges for those pursuing visitor research has been ensuring that the results of such research are fully built into and reflected within the museum's undertakings. This is something that Marilyn G. Hood documented in 1991, yet there is evidence that these concerns persist today. For instance, Romanello (2013) conducted 20 interviews with museum staff who work directly with community members and visitors from four art museums in Spain and France to explore how visitor research is applied within the museum context. She discovered that the awareness of the potential for visitor studies to inform organisational approaches was not diffused across the institution but was concentrated in those who felt they had expertise in audience development strategies. Margee Hume (2011), too, noted of research into museum visitation, including motivations for visiting and visitor expectations and satisfaction, that "there is little evidence that findings are incorporated into museum practice" (Hume, 2011, p. 75).

It is important to consider that although digital technologies can provide insight into the actions people take whilst visiting the museum or using its online resources, they cannot necessarily provide insight into motivation, feelings or learning whilst there. Traditional mechanisms for audience research such as interviews and surveys remain important, even as new technologies offer opportunities for new insights (Jensen & Sørensen, 2013). Additionally, while visitors to the physical space of the museum will continue to carry the burden of being the audience most associated with quantifiable success for funders and other stakeholders – at least until the museum is better able to monetise and quantify the value of its online audiences – all aspects of audience behaviour will inform the concepts that museums have of their audiences.

A further paradox emerges in this increasingly mediated context, with low barriers to entry, wherein it becomes easy to imagine that all audiences and publics are represented and made visible. However, as Sonia Livingstone pointed out, "not all audiences participate, and not all participation is mediated" (Livingstone, 2013, p. 25). Although the turn towards digital participation and quantification of audiences has greatly increased the visibility of many of those previously without representation, there is a significant danger in imagining that *more* means *all*. Even as certain participants in digital or networked activities become discernible, others are rendered increasingly invisible. Frequently, it is those audiences that are most vulnerable who lose out in such a dichotomy; those without digital tools or skills, those who cannot advocate for themselves due to language or economic barriers, those who are young or old. As identity practice becomes explicit, measurable and analysable, in the context of public or semi-public online activities, those who cannot or choose not to participate are increasingly powerless to shape their own experiences or to influence the organisations that serve them. This is significant for institutions such as museums whose audiences are increasingly found online in addition to their traditional place-based locations.

Where next for audience research in museums?

Hooper-Greenhill (1994) pointed out that museums have long been caught behind audience studies in mass communication and cultural studies, both in terms of concept development and methods. However, the convergence of media and digital technologies has prompted the sector to embrace the tools and methods of online audience measurement and consider how such approaches may be utilised in the measurement of onsite visitors as well as online audiences. Doing so is important because, as institutions with public-facing missions, museums are increasingly expected to mount a compelling case that tangible and meaningful benefit results from investing in the arts and culture. Trustees, funders and the public increasingly expect that museums will not only deliver upon their missions but also that they will provide evidence of that accomplishment. Mere numbers through the door, or clicks on a social media post, can fail to paint a full or accurate picture of an institution's impact, so research that can speak to the institution's influence has become increasingly sought after. As such, the museum's audience and its conceptualization have irrevocably become linked to questions of impact and success. Mapping and measuring the audience – with traditional as well as innovative qualitative and quantitative methods – matters, because it acts to justify the museum's ongoing existence and why it needs support and funding. It has also become seen as a crucial factor in reconceptualising the institution as a participatory and democratic institution that positively impacts its community.

Like media organisations, museums are highly invested in their conceptualisations of their visitors and audiences because they are, as Ien Ang (1991) notes, dependent "on the actual existence of the audience in very material terms" (p. 3). However, while museums depend on their audiences, they cannot be certain of their interest and involvement in its products. In the United States, a recent National Endowment for the Arts (NEA) Survey of Public Participation in the Arts (SPPA) survey noted that arts attendance amongst United States adults has generally been in decline, and that attendance at art museums, craft fairs and visual arts festivals, specifically, decreased in both 2008 and 2012 (Blume-Kohout, Leonard, & Novak-Leonard, 2015, p. 6), and visits to art galleries and museums in the United States declined by 31% between 2002 and 2012 (Silber & Triplett, 2015). Such numbers can be worrisome for institutions whose livelihood depends on their capacity to meet their audience's needs and to demonstrate value and impact whilst doing so (see Karen Knutson's chapter in this volume). This is one reason that audience research has often focussed on non-visitors, or those who don't attend museums, to learn more about the factors that impact such decisions. Recent ethnographic research by Emily Dawson showed that low-income minority groups attending natural history museums and science centres tend to express the feeling that museums are not "designed for us" (Dawson, 2014). The groups perceived museums as expensive, even when entry was free, and thought they would feel unwelcome and unwanted. Dishearteningly, these negative expectations were frequently met. Audiences remarked that they didn't know how to behave within the museum, which meant that they felt uncomfortable or excluded. This is a significant concern for institutions whose reproduction relies on their capacity to create experiences that keep visitors returning.

For reasons both political and practical, it therefore becomes important to ask, who is and is not participating in a museum's mediated spaces and activities? How is that participation valued over other kinds of experiences? Who is advantaged and disadvantaged by the increasing capacity to measure, quantify, name and analyse via digital means? And how do these practices shape our institutions and the assumptions we make about those who do or might use them? If, for instance, we know that the institution can be costly and unwelcoming to people from minority and low socio-economic backgrounds, how do we account for those audiences if they are already unable or unwilling to participate? Can the museum's resources be mobilised to meet the needs of those often-vulnerable visitors and audiences whose actions and requirements are rendered invisible? As museums refine the tools and technologies for capturing and analysing visitor data, they must be careful to interrogate their own assumptions about the audience, what success looks like, and who is and isn't being served by the institution.

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Part II

Environments

Kirsten Drotner, Vince Dziekan, Ross Parry and
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Museums and media companies share an interest in understanding their cultural and social environments, not least their visitors and audiences. As institutions serving their communities at various levels – be they local, regional, national or international – they need to closely monitor whether their cultural goods and services are appreciated by or serve the purpose of their respective constituencies and stakeholders. To provide such knowledge-to-act-on for businesses and organisations has been the task of different forms of applied, often commercial, research.

In the area of academic media research, scholars have sometimes taken on the task of providing such practical, strategically useful knowledge to media companies, advertisers, and political regulators in order to help them better understand how media can optimise their appeal to actual and prospective audiences in commercially viable ways. Other media researchers have been more concerned with examining the socio-cultural role of the media, considering to what extent the media succeed in serving as vehicles of democratic citizenship and cultural identity-building, and catering to a diversity of tastes; thereby providing an important critique of the machinations of media communication at discrete institutional, systemic and more diffuse socio-political levels.

In a seminal article, media scholar Paul F. Lazarsfeld labelled the knowledge interests driving these two kinds of research "administrative" and "critical" communication research (Lazarsfeld, 1941). Administrative research is oriented towards "goal-oriented and instrumental studies that resolve specific issues for the purpose of developing, planning, or maintaining some communication activity" (Jensen, 2012, p. 359). In Lazarsfeld's words, such studies "solve little problems, generally of a business character" (Lazarsfeld, 1941, p. 8). Conversely, critical research "addresses the wider social, cultural, and historical issues that technologically mediated communication raises, often in a user perspective and with reference to the public interest" (Jensen, 2012, p. 359). As Lazarsfeld put it, such research engages in "forward-looking projects related to the pressing economic and social problems of our time," taking up "the general role of our media of communication in the present social system" (Lazarsfeld, 1941, p. 8–9), and it is sometimes conducted "purely for the purposes of intellectual understanding" (Barker, Mathijs, & Turnbull, 2015, p. 4).

In making this distinction, Lazarsfeld suggested, first, that often a specific research activity can be categorised as one or the other; second, that both kinds of research serve legitimate institutional or social interests; and third, that in many cases it is not possible to draw a clear-cut distinction between communication research that is "administrative" and research that is "critical" because these approaches "exhibit a number of similarities and are often combined in practice" (Jensen, 2012, p. 360).

The chapters in this part can be seen as research-based interventions which analyse different relationships between museums and their environments in ways that, to a greater or lesser extent, transcend and cross-fertilise administrative and critical lenses for observing museum communication. The research-based findings and arguments in the five chapters may serve, on the one hand, as insights which can be operationalised into practical initiatives by museum professionals in order to improve their community, audience or visitor relations; on the other hand, they throw critical light on the roles that museums play in their wider societal environments, as resources for democratic participation, complicit collaborators with global IT-corporations, catalysts of creative expression, or as learning environments for cultural citizenship.

Taking the issue of natural history museums and climate change as her case, Karen Knutson focusses upon the increasing tensions that natural history museums face when creating exhibitions about controversial issues. In order to do so, Knutson describes the difficult balancing acts of four different natural history museums and their efforts to put the sustainable future of the planet on the agenda, while simultaneously serving the (often competing) interests of their local and global communities, corporate sponsors and political communities. She identifies how attempts to move beyond collections and exhibitions as an authoritative, unidirectional and non-partisan communicative form (such as the Climate and Urban Partnership initiative in the United States) offer a broad range of learning experiences to their local communities, including dialogical and activist forms of community outreach.

Knutson's chapter thus exemplifies the combined "administrative" and "critical" ambition being developed among some museum communication researchers: on the one hand, her analysis and the recommendations emerging from it offer very tangible and practical advice about communication and learning strategies that museums can adopt to be "part of the neighbourhood" (such as to convene community networks, organise climate festivals, etc.). On the other hand, the analysis presents the embryonic contours of a radical theoretical rethinking of the public agenda of natural history museums in the age of planetary climate threats.

In her chapter, Rikke Haller Baggesen discusses how the entry of mobile media into the museum, with their technical affordances for new modes of visitor and public engagement, has also led to the emergence of new ways of thinking about how museums perform their role. "Mobile museology," she argues, creates new forms of organisational agility (both inward- and outward-facing). Blending theoretical insights and illustrative examples, Baggesen reveals that while mobile technologies offer museums opportunities to design new experiences that enrich visitation as well as other situated encounters that transcend the physical boundaries of the museum, a mobile mindset might support critical thinking about how they can pursue participatory and dialogical involvement of the public that destabilises established cultural hierarchies.

Palmyre Pierroux illuminates "meaning making," "relevance" and "engagement" as pivotal concepts for designing and analysing the roles of digital, mobile and social media for learning in gallery settings, on interactive websites and through online archives. By applying Lawson & Lawson's (2013) conceptual inventory of cultural congruence, cultural correspondence and cultural relevance, Pierroux's chapter demonstrates how museum mediascapes structure visitor engagement and learning. By taking a hybrid visitor and reception analysis to the subject, she focuses on how opportunities for visitor engagement are constructed in concrete museum mediascapes; exemplifying this via an observational study of how a multi-professional research-practice partnership of learning researchers, museum curators and interaction designers analysed student usage of mobile and social media in the National Museum of Art, Architecture and Design in Oslo, Norway. In doing so, this research contributes critical understanding to how museums can approach their educational objectives by becoming a testbed for innovative media design in the wider societal context of building the learning literacies required for the 21st century.

According to Pille Pruulmann-Vengerfeldt and Pille Runnel, by inviting audiences to engage in creative and co-curatorial roles in exhibition-making and, by extension, museum-making, the historical cultural authority of museums as heritage institutions is challenged. The rich empirical cases drawn upon in their chapter (mostly taken from the Estonian National Museum's diverse participatory initiatives) adopt a dialogical stance to groups and individuals in their surrounding communities. On the one hand, these examples offer concrete "communicative and participatory choices" for museum practitioners to consider; while on the other, the chapter also raises these "hands-on" initiatives to the level of civic agency and democratic reflection, where they can be seen as vital contributions to the museum "as a pillar of democratic society."

Finally, Bjarki Valtysson and Nanna Holdgaard analyse museums' use of empowering digital technologies that enable the creative participation of audiences as they intersect with the political objectives and commercial interests in the experience economy. The authors present a strong case for understanding how the digital promise of creative empowerment is always embedded in the "new public management" reality of considering visitors as "prosumers" in wider processes of commodification. This embedding is explored through two analytical cases, The Amsterdam Rijksmuseum's "Rijksstudio" and Europeana's "VanGoYourself," where people are invited to play digitally with artworks "charged" with the historical authority of art museums in ways that end up being monetised either by the museum itself or by IT giants like Facebook and Google. The chapter invites reflection by museum managers and curators about the potentially exploitative implications of invitations to audiences to creatively re-mix, design and reproduce artworks for mundane everyday objects like T-shirts and mugs, or to share them on social media platforms; at the same time, it presents a compelling and incisive critique of the widespread hype about creative empowerment often offered by cultural opinion leaders.

Together, these chapters exemplify the combined "administrative" and "critical" application of museum communication research. The ways in which museum communication can attain a higher degree of relevance for and empowerment of their audiences and visitors is to some extent a shared goal and ideal of the analyses offered by the authors of these five chapters. The challenges facing these endeavours to make a real difference in a museum's environment are many, just as empowerment comes in many varieties of dialogue, engagement and collaboration, and operates on different scales of socio-cultural embedding – from adaptation to the drivers of the experience economy to creative in-gallery self-expression and identity-building. The chapters in this part show how most of these endeavours rely on the museums' imaginative use of digital, mobile and social media, framed by an over-arching regime of mediatisation.

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II.1

Rethinking museum/ community partnerships

Science and natural history museums and the challenges of communicating climate change

Karen Knutson

This chapter explores changing relations between communities and science and natural history museums in the United States. Using the case of climate change, I highlight some of the communication challenges faced as museums negotiate new roles in light of the needs of funders and public audiences. Museums have long traded on their role as a non-biased source for authoritative information, but recent efforts at climate change education in museums can be used to pinpoint some of the complex factors surrounding communication and messaging in museum work. This chapter explores the institutional frameworks that shape how climate change education has been communicated in museum settings and suggests a rethinking of museum work as networked and community-focussed.

In 2012, 150 natural history museum professionals, curators, educators and researchers gathered in Washington, DC, to plan and develop a research agenda for natural history museums in the 21st century (Watson & Werb, 2013). Over the two-day meeting, many subgroups and breakout discussions developed different aspects of the agenda. One self-organised group decided that before a research agenda could be created, they would first need to establish some common ground for thinking about the values and beliefs that ought to characterise the natural history museum of the future. At the end of the meeting, this group presented the following manifesto:

February 15, 2012 DRAFT
Statement on the assets, public value, and potential of Natural History Institutions
"*The Declaration of Interdependence*"

The natural history institutions of the world affirm that:
Humanity is embedded within nature and we are at a critical moment in the continuity of time.

Our collections are the direct scientific evidence for evolution and the ecological interdependence of all living things.
The human species is actively altering the Earth's natural processes and reducing its biodiversity. As the sentient cause of these impacts, we have the urgent responsibility to give voice to the Earth's immense story and to secure a sustainable future.

WHAT WE ARE
We are places, people, collections and facilities that connect the natural world and humanity in the past, present and future. We are trusted and we are in the public trust.
DISCOVERY – We make discoveries and create knowledge
We create new knowledge, collect, study
We are a collection of experts
Our collections continue to be global resources of knowledge.
PRESERVATION – We are the keepers of the record
We are the places where our culture houses its treasures
We are a bank for information for the future
We are the archives of a changing world
AUDIENCE – We are learning institutions
We disseminate, inspire and inform
We tell the whole story
We connect art, science, nature, place and culture
We are a resource for people to take action
We are a meeting ground for science and culture
We are where children learn about the diversity of the natural world
We are places for public deliberation.
CREDIBILITY AND PUBLIC TRUST
We are owned by our public
We are trusted

WHAT WE NEED TO BE
We recognize these tenets and our assets as the basis for a framework of collaboration and action:
We will be places where the complex challenges of the future are met in an open, honest, inclusive and rational way.
We will be welcoming to all people, not just our traditional constituents.
We will actively engage our assets, science and stakeholders with local and global nature.
We will be the storytellers of humanity's origins; the interface between humans and nature.
We will reinvent ourselves to become trailheads for lifelong journeys of nature and science exploration.
We will be agents of social change and embed people in nature by giving them new eyes with which to see the world and to understand their responsibility.
We will work together.
We will catalyze a sustainable future for the planet.
We will do this before the end of the century. (The Declaration of Interdependence, 2012)

The statement, which resonated a sense of urgency through the intertextual reference of the title to the American Declaration of Independence (1776), later used to craft ecological variants that focussed on the interdependence of both nations and nature, was bold, and it created a buzz at the meeting, issuing a challenge for museums to work harder and aim higher – moving beyond focussing on preserving collections to playing a more central role in social change and creating a sustainable future for the planet. The statement underscored the critical moment in history in which we are now situated, and the vital need for extreme change should humanity wish to thrive (or even just survive) in the future.

Still, long after the meeting, I have found myself returning to the declaration and thinking about those who created it. It was a manifesto of sorts, but do they, or how do they, enact its principles? What are the challenges they face as they work for relevance and change in institutions that tend to be organisationally siloed and somewhat resistant to change? How *can* these types of museums address society's issues? I've been drawn to consider how science and natural history museum staff envision their work and how it translates to audiences through exhibitions, programming and the public face of museums; wondering about the visible disconnects between positive apolitical science and technology messaging, and the deep environmental concerns of staff scientists and educators. This chapter explores the nature of this disconnect. After first examining museum communication issues in relation to climate change exhibitions in the United States, United Kingdom and Sweden, I then discuss a recent project on climate change education in museums that I've been working on for the last four years. The Climate and Urban Systems Partnership project proposes a network-based model for museum communication where, working with neighbourhood organisations, museums serve as a resource hub and catalyst to bring climate change educational materials to new audiences outside of the museum. The project offers insight into how museums might work with communities in a way that helps to transcend the limitations of the institutional constraints posed by traditional museum media formats.

Museums and communities

In an article that documented changing beliefs about the roles and purposes of museum work over 70-plus years of museum practice in the United States, Stephen Weil compellingly made a case for museums to change how they think about communication and their audiences, to move from being storehouses, or places for simple amusement, to become places that are relevant to the improvement of society; from being about something to being for somebody (Weil, 1999). This was no small task, and counter to a mode of communication and display that puts the emphasis on an objective and inherent value in objects, as specimens held in a collection. And this knowledge was never a neutral proposition – many have argued that the proliferation of museums in the 19th century, in some ways, served the desire of elites for the social education of the masses (e.g., Duncan, 1995). Tours and lectures and later outreach programmes, featuring artistic copies or trunks with physical specimens, helped new immigrants to learn about Western culture and social norms. The focus was on transmission – helping visitors to see the value of the museum and its objects and collections, without much consideration of the needs, interests and contributions of audiences and communities with whom they might wish to communicate. In the 1990s, cultural museums began a period of deep introspection about how they were representing, or not representing, different communities, their voices and histories in collections and exhibitions (Karp, Kreamer, & Lavine, 1992). Museums began to question their relevance for different sectors of the public, and challenged themselves to become more inclusive (Hirzy, 2002), to be a more relevant resource for communities (Weil, 1999) and to address critical social issues such as sustainability in the Anthropocene (Janes, 2009).

There are, of course, many mechanisms that can be used in exhibitions to create a sense of two-way communication between museum and visitor. Voting activities, feedback boards and comment books can be operationalised in myriad ways, all helping to humanise and collectivise the experience. Museums have also experimented extensively with the voice used in labels, as the traditional third-person creates a sense of disembodied objectivity and a lack of someone with whom to argue (Ravelli, 2007).

Soliciting advice about exhibition content is a common tool used by museums to value visitor input and expertise. But in addition to consultative roles, museums have developed different ways of working with communities. Museums have experimented with co-developing exhibitions and even providing a venue for projects that showcase community members' interests, such as youth skateboarding, that clearly fall outside of a museum's expertise or collections (Dake, 2016). Community dialogue groups for exhibitions with potentially difficult content have been one tool recently employed, as museums have struggled to find ways to embrace and value a more dialogic communication style. And in some cases, museums have partnered with community groups to help change government policies, as in a case of a museum that worked with allotment gardeners to protest the takeover of their plots by development (Zych, 2016).

Climate change in museums: Lessons from exhibitions

Examining four examples of climate change exhibitions provides a useful means to illustrate some of the tensions that have faced museums as they attempt to tackle controversial and complex social issues. The museum sector has a strong belief in its role as a place for open community dialogue and discourse, and as a trusted source for credible scientific information. In a study that suggests that museums have the potential to be key players in climate change action, Cameron and Neilson (2014) note that the public believes that museums are in a unique position in the media and political landscape; as impartial and safe places that are trusted sources of information that is somewhat less political than other media and governmental agencies. However, as Robert Janes (2009) points out, museums are rarely acknowledged in global discussions of climate change, environmental degradation, the inevitability of depleted fossil fuels and the myriad local issues concerning the well-being of particular communities.

Certainly, the museum workers who created the Declaration of Interdependence illustrated a high degree of investment and desire for their museums to become sites for public action and engagement around important social and environmental issues. But how might this concern be enacted within their institutions? While museums now have many avenues for communication, including websites, public programmes, and printed materials, exhibitions continue to be the focal point for museum work. Exhibitions are the primary way that museums communicate to their public. They are expensive, public-facing and define the identity of a museum. Temporary exhibitions, a major attendance driver in many museums, also serve as a mechanism for marketing to new audiences and bringing in special funding to the institution. Finally, in some cases, exhibitions also serve as primary scholarship for curatorial staff. These characteristics make exhibitions particularly important and challenging media for museum communication.

A fine line between urgent and scary: The American Museum of Natural History

In 2008, the American Museum of Natural History (AMNH) presented "Climate change: The threat to life and a new energy future." The exhibition suggested a problem and a solution, but it was criticised for its ominous tone. The grim message behind a graphic illustrating a sudden strong increase of carbon emissions (the so-called hockey stick graph)[1] was amplified with the inclusion of a timeline showing when different industrial technologies emerged: climate changes are caused by human factors. But it was a model of Manhattan of the future under three feet of water that would provide one of the arresting and memorable visual examples from the show (Mathez, 2016). The scary and strident tone caused a reviewer from the *New York Times* to call it "Apocalypse now, via diorama" (Rothstein, 2008). The exhibition focussed on explaining the science of global warming, as well as insuring that visitors understood that the threat to humans, cities and nature was indeed something to be concerned about. There were a few solutions-oriented elements, such as an action wall highlighting changes individuals could make. But the main focus of the exhibition was on explanatory scientific examples around geology, fuel and nature, and the causes and impacts of climate change. A summative evaluation for the exhibition showed that while a section on alternative energy provided a sense of hopefulness, visitors found the exhibition to be informative but worrying and sensationalised (People, places, & design research, 2009).

California Academy of Sciences: Keep it positive and focus on mitigation

Taking a different approach, "Altered state: Climate change in California," a 2009 exhibition at the California Academy of Sciences (CAS), presented the issue of climate change in a more upbeat manner. The exhibition provided a good overview of carbon, climate change and local impact, including segments about new technologies, changing oceans, seasonal weather changes, damage to glaciers and mass extinctions. The exhibition included an incredibly large scale physical version of the "hockey stick" graph (showing the rapid rise of carbon in relatively recent past and near future), but the tone here was more awe-inspiring than scary, as the red bar of the large graph extended right up through the ceiling height of the exhibit area. A positive tone was established with the text: "Climate change may be the biggest challenge of our lifetime but Californians are working together to cut back on CO2. We're taking action in our communities, religious organizations, schools and businesses." Focussed on mitigation strategies, the designers felt that visitors needed "a pat on the back" – "they need to feel they have a real impact, and efforts should seem easy and manageable" (Pope, 2014).

Compared to the AMNH example, this exhibition struck a more positive, forward-looking tone. Broad themes and new inventions were showcased alongside individual agency and personal choices related to mitigation. The focus on individual actions and positive technological development was not coupled with a strong section on the political work that would be required to influence policy change. A kiosk provided access to Web-based information about the ideas mentioned in the exhibition. To help visitors think about how their personal decisions impact climate change, a computer station provided a mechanism for visitors to email legislators for emissions reductions measures.

This exhibition included hands-on activities geared to a family audience, including a carbon footprint calculator (a large pendulum-like scale that could be set to reflect different individual choices in transportation, house size, etc.) and a carbon café (a table with plastic food choices where flip-up labels showed facts about the carbon impacts of these foods). Visitors could move a slider bar to choose whether energy use in their home rates from 0–12 tons of carbon per year (the bar notes that the average American home uses ten). While most visitors would be hard-pressed to understand their energy use in tons, the activity provided a basic view of a carbon footprint and its relation to individual choices.

Both of these activities, I think, reflect the difficulties of designing for a general audience. The takeaway messages are both abstract and general: Eating meat has a high impact; driving a car is worse for the environment than riding a bicycle. But the calculations behind both of these activities are actually incredibly complex. What happens to the result when you're eating locally produced meat, or salad shipped by air? What about the water and energy inputs required to grow, pack and ship food? While visitors understand at one level that their choices have consequences, there isn't much in the exhibition to help take this understanding to the next level. No supplementary information was provided about how the calculations were determined. How does one consider the cumulative impact and trade-offs from favouring one solution vs. another?

Tekniska Museet: Showing the system

"Spelet om energin" (The energy game) is an exhibition that opened in 2010 at Tekniska Museet Stockholm (TM). It is focussed around a quest for players to reduce a person's amount of carbon dioxide emissions from 10 to 2 tons by 2050, by making a series of choices across a series of interactive games that involve food choices, shopping, travel, etc. Interspersed among the game elements are exhibits that discuss the history of energy sources and Swedish life. The exhibition builds on a historical collection of energy-related exhibits at the museum. There are models of energy sources, historical innovations, advertisements, pictures of residential and industrial energy use and displays that highlight the changing requirements, sources and regulations around energy in Sweden and beyond. The exhibition is child-friendly, and the game is hosted by animated cartoon characters conversing with visitors through signage found throughout the exhibition. Charts and graphs allow for deeper consideration of data and historical trends. Carbon calculators provided in the exhibition offer more complex explanations of assumptions and factors than were seen in the CAS example, but the serious scientific facts are livened with cartoon-like animated sketches to show, for example, changing consumption patterns of gasoline and meat consumption.

The exhibition concludes with a large and positive display featuring designers who are using recycled or energy-friendly materials in their creations. This is a nice example of an exhibition where climate change information is layered into a broader story of the history of energy. While individual agency is important to the narrative, the exhibition goes beyond individual actions to show how systems thinking, future scenarios and the complex history of energy/environment trade-offs are woven into the story of industrialisation.

Science Museum, London: Science and uncertainty

"Atmosphere: exploring climate science" opened in 2011 at the Science Museum, London (SM). It is a high-tech exhibit space with a futuristic aesthetic; slick curves, spotlights and digital lights. Exhibits focus on the science behind climate, what might happen next and options for our future. Information about the sun's energy and the causes of climate change feature in this exhibition, as does a sediment core, notes about the scientists who discovered the greenhouse effect and other key climate science-related discoveries. A positive future note is presented with potential developments that could help mitigate climate change, such as a low-carbon hydrogen cell car. In addition to include strong scientific content, it followed suggestions from science education (e.g., National Research Council, 2009), by focusing on scientists and scientific discovery. Five interactive games are a focal point of the exhibition. One of these high-tech games about mitigation asks users to alter features in a neighbourhood and then test how floods will impact it. An engineering task, the game is fun but a distant abstraction from the very real consequences of climate change impacts.

Comparing the abstract and animated experience of the flood game to the flooded Manhattan exhibit in the AMNH example illustrates a marked difference in communication strategy. Unlike the strong messaging about what can be done, and the positive technological developments we saw in the CAS and TM examples, here, as in the earlier AMNH example, the Atmosphere exhibit centres primarily on scientific processes and highlights both what is known and what is uncertain about climate change. By focusing on the scientific process here the exhibition meets its goals of showcasing the work of scientists but it is also a distancing move that allows museums to step back from taking a strong stance about the urgency of the problem.

Many have pointed out danger of this approach and how the role of funders, with a stake in continuing carbon extraction, may be influencing the message (Nesbitt, 2015). Shell was the major corporate funder of the exhibition, and the insertion of a level of uncertainty is a common tactic used in messaging campaigns to diffuse the potential impact of a negative message. In recent years, the museum sector has also begun to come under fire for accepting oil and gas funding, as cultural funding has long been a strategy for tobacco and oil companies to gain some public credit (Evans, 2015). The Science Museum is not alone in being called out for its connections to big oil and its potential impact on exhibitions (Strauss, 2014). A growing call for fossil fuel divestment is currently beginning to impact museums, with several large institutions announcing divestment plans (Bagley, 2015).

These climate change exhibitions illustrate some of the complexities that face the Declaration of Interdependence. Politics and the inevitable influence of funding intersect with the desire to provide positive messages and a fun experience for users who have come to expect that these experiences will be fun, with hands-on activities geared towards a younger audience. Also, in the process of trying to present the most agreed upon version of science, museums may be risk-averse in their interpretation of science. This point was nicely pointed out in Macdonald and Silverstone's careful analysis of the development of an exhibition about food. They argue that the demands for clear narrative structure with repeated key messages create a challenge for creating space for potentially controversial points of view to appear. A desire to provide a balanced tone and a desire to call upon a broad cadre of expert scientists for content means that opinions can become watered down into a generalised and not particularly enlightening message (Macdonald & Silverstone, 1992).

The museum audience

Designing content for exhibit experiences that might be seen as controversial is impacted by the context of funders and a desire of museums to present an accepted and balanced point of view. But the audience for these experiences is also a moving target, and audience beliefs about climate change were a contentious issue during the time that these exhibitions were created (Abbasi, 2006). In 2008, a study that measured the American public's beliefs and attitudes around climate change was first run (Leiserowitz, Maibach, & Roser-Renouf, 2008). The "Six Americans" study suggested six categories of American adults, distinguished by their beliefs: the alarmed, the concerned, the cautious, the disengaged, the doubtful and the dismissive. About 51% of those surveyed fell into the alarmed and concerned buckets. During the years in which our example exhibitions were developed and installed, conversations among museum professionals focussed a great on how to deal with climate change deniers and convince the doubtfuls and dismissives. Yet with more media exposure as well as several large-scale weather events (i.e., superstorm Sandy impacting the United States East Coast in 2012), the public conversation has shifted rapidly, and the reality is that science museumgoers are probably already among those who were more likely to know about and believe in climate change. In 2011, one study suggested that:

- 90% of frequent museum visitors say that global warming is happening, compared to 67% of occasional visitors and 60% of non-visitors

- 66% of frequent visitors understand that global warming is caused mostly by human activities compared to 48% of occasional visitors and 50% of non-visitors
- 65% of frequent visitors understand that most scientists think that global warming is happening, compared to 47% of occasional visitors and 36% of non-visitors
- 58% of frequent visitors understand that a transition to renewable energy source is an important solution compared to 46% of occasional visitors and 42% of non-visitors (Leiserowitz & Smith, 2011)

There is still much work to be done to achieve the kind of outcomes envisioned by the Declaration of Interdependence. Part of the issue is that science and natural history museums are not as comfortable with controversy as history and culture museums, which have been active sites for discussions about difficult issues such as inclusion, racism and diversity (Sandell, 2002).[2] But part of the issue might also be that exhibitions continue to be the dominant way that museums engage the public.

Some museums have had a more difficult time than others in addressing their critics, but exhibitions at this time reflect an awareness of potential conflict or controversy surrounding their discussion of climate change. For example, the CAS exhibition prioritises a positive active stance but uses political cartoons to suggest the urgency and potentially controversial nature of the subject. The cartoons were posted beneath signage that said: "Climate is an angry beast and we are poking at it with sticks." One cartoon of a city street scene showed a man encountering a big cactus growing in the sidewalk. The caption read, "I'm starting to get concerned about global warming." Another, captioned, "global warming," showed a scientist walking on a desert saying, "one more study." In the bottom right corner, it said, "Hint on findings: too late." The cartoons could be seen as humorous, spot on, or not to be believed, but their use allowed the museum to make a stronger curatorial statement about the human causes of climate change, which was, at the time of widespread climate denying in the United States, seen as a politically difficult statement to make in a museum context.

The challenge seems to be, then, how best to engage and activate current and new audiences who were already pre-disposed to conversations about climate change and sustainability, and how to position the museum and its resources in these conversations, especially if the goal is to foster a continuing dialogue within a particular community (Cameron, 2005, 2013). Research suggests that it is not knowledge but rather identity, social norms and community influence that are consistently predictive variables when examining environmentally-friendly behaviours (Abbasi, 2006; Shandas & Messer, 2008; Allen & Crowley, 2017). Focussing on presenting climate change messaging derived from mass-media-centric perspectives to a general and generic museum audience missed the great possibilities of museums as potential mediators of social change (Salazar, 2011).

Museums communicating climate change: Beyond the exhibition

Climate and Urban Systems Partnership (CUSP) is an example of a museum-based project that explores a changing relationship between museum and community. Devoted to increasing the adoption of effective, high quality educational programmes and resources related to the science and impacts of climate change, the project includes museums in four Northeast American cities (New York, Philadelphia, Pittsburgh and Washington, DC). Museums serve as network hubs to support community outreach and test whether and how museums can be used as catalysts in their communities, to help energise climate change education in informal learning organisations. Programming is designed around three concepts: framing for relevance, participation and systems thinking (Allen & Crowley, 2017). Importantly, programme work asks museums to design educational information to be relevant to issues of interest and concern to specific community organisations and neighbourhood-level groups. What do city residents care about? What are the issues, topics and activities with which residents personally and socially identify? And then, how will climate change impact these interests? It is a targeted, coordinated approach that relies on connecting personal passions and interests to urban systems and how cities will be impacted by a changing climate (Schneider et al., 2014).

Urban learning networks as community partners

By using this approach, information about climate change becomes available through a broad range of learning experiences in different city settings. The goal is to create a relevant, city-wide approach to improving the state of climate literacy in the urban environment. The CUSP approach involves the creation of networks that are convened by the museums and include community-based groups with varying relations to climate change or environmental interests. These so-called "urban learning networks" work on different kinds of climate change education projects that relate to their constituents and that include museum-based resources. Partners vary in each city but include advocacy groups, city utility or government agencies, informal educators at other museums, zoos, botanic gardens or afterschool or in-school educational providers. Most of the organisations involved are cultural institutions, nonprofits or environmental organisations. Local network participants do not necessarily have climate change education as an outcome of their work. In early planning of the CUSP model, one example that was utilised was a hypothetical kayaking group. Kayakers are not an environmentally focussed group by design, but the group might be concerned about climate change impacts on kayaking. For example, climate change increases the number of extreme rain events, which, given the out-of-date and under-sized sewage infrastructure in some cities, would cause more days of unsafe paddling water due to combined sewage overflow. In this way, activities proposed by museum developers could connect with a pre-existing interest in a range of affinity, geographic or cultural groups in the city.

Rethinking outreach: Testing different communication strategies

The key to this approach is that the CUSP project does not target a typical museum-going audience. Climate education resources from the museum filter through the network and their constituents. The museum works to find ways to help other organisations tap into museum resources and in the process is able to reach potentially non-museum-going audiences. This requires a rethinking of the ways that museums design activities and communication strategies. The traditional mechanisms of museum outreach, either access to specimens or artefacts, or teacher/docent-led presentation of materials, would not neccessarily be accessible to, or valued by these audiences.

Each of the four cities in the project has taken on the development of a different communication strategy within its network. In subsequent years, these strategies (which included digital tools, festival kits, neighbourhood strategies and professional development) were tested in the other CUSP cities with changes to suit the particular local needs of each city's network. For example, as a digital tool project, the New York Hall of Science created a user-generated map of the city that incorporates layers about city infrastructure, flood plains and green roofs and garden projects. Network members also integrate the map into their programming, from uploading citizen science data to sharing stories and pictures via the map. Signage projects and mass media campaigns were tested by the Philadelphia museum the Franklin Institute, with community members asked to participate in a social media photo contest that highlighted the fact that the city will be hotter and wetter due to climate change.

As another example, responding to the needs of network organisations, many community-based organisations attend festivals around the city. In addition to providing information about their organisation, simple hands-on activities are often available. A festival kit project created approachable and hands-on activities used to facilitate conversations about locally relevant issues that have a relation to climate change that could be used by network organisations at temporary festival events. The Pittsburgh museum partner, the Carnegie Museum of Natural History, developed kits related to topics such as the temperature effects of alternative roofing materials, the carbon footprint of mass-transit versus car-centred transit systems, and urban stormwater management. With kits distributed among the booths of several community organisations active in local environmental issues, visitors have multiple opportunities for interactive learning and conversation about climate change and their city within a short time frame.

Participatory, relevant, connected

These projects relate in some ways to some programmatic activities that museums might engage in, but they fall outside the scope of traditional museum media in some important ways. The goal for the project is to grow the network of concerned and informed organisations that can then influence their constituents. Network development and support was a key part of the project, and each of the four cities experimented with different ways to grow and support their networks (Steiner, 2016).

The development of these kits provided the CUSP team a way to better engage network members in thinking about climate change issues that are relevant to their constituents, as well as thinking about the delivery of informal education activities themselves, and while the museum had long created such activities and had exhibit departments who could easily produce high-quality kits, the CUSP team wanted to use the kit development process as a way to engage network members in thinking about the issues around climate change, the educational needs of their audiences, and their own roles as content deliverers. Network members were stationed alongside other members at festivals, and this process of seeing colleagues work with audiences using the kits created a learning opportunity and a common experience upon which they could draw in designing new kits, thereby further strengthening the network and helping network members feel more confident about their ability to share the CUSP message about climate change in relation to the issues of their own organisation. Through this process, we heard network members moving from statements like: "I don't know what climate change is" to "I don't see how this activity is related to climate change" to being able to thoughtfully discuss impacts, causes and solutions (Steiner, 2016).

Exhibit designers or other museum staff help with specific aspects of these projects, but education-oriented staff are in charge as network developers and managers. They are partners in the network, and in this work, focussing on participation, relevance and connectedness, they are museum professionals that model a new kind of relationship-centred, socially-focussed museum (Silverman, 2010; Salazar, 2011). The emphasis in the project is on creating a place for conversation and dialogue, not prioritising the unidirectional sharing of information (Sandell, 2002). Local community-based organisations and stakeholders (a heterogeneous and multidisciplinary group) engage in many learning opportunities, such as: workshops, quarterly "Ask a climate scientist" webinars, Climate News alerts, a monthly seminar series, kit design challenges and networking. Through project activities, a network strengthens, and diverse groups or organisations benefit from collaboration beyond the initial scope of the project.

As CUSP requires a reorientation of how museums typically envision their work with audiences, some unusual programmatic choices have resulted. The Philadelphia museum team asked their marketing department for money to build a special bike for a neighbourhood bike rally.

It was a multi-person powered contraption with umbrellas that opened and shut as the wheels turned. It was not a familiar activity for the education department, and marketing and finance department staff asked questions like, how on earth is this part of a climate change education project? Where's the science? Where's the education? The bike was a silly thing really, but the team sensed that it was an essential part of the project for climate change education the museum was working on. The bike promoted the CUSP project and ostensibly highlighted the fact that the city would be much wetter in the future due to climate change, but the bike's real purpose was to build credibility in the community network. The neighbourhood had an annual bike parade, and to participate in this activity was about belonging and being a part of the neighbourhood: to participate was to build community. Once guided by their own educational motives and perspectives, here the team has had to step back from being the primary driver of programming. Museums have had to find ways to connect with network partners and to really see themselves not as a provider of services to, or for, a community, but to see themselves as one of many within the community who are working for change.

By working with a network of other organisations, the museum was forced to think more broadly about its impacts and outcomes. Unlike traditional forms of museum outreach, providing educational programmes that highlight the museums' resources, the CUSP model puts the focus more squarely on the museum being a side-by-side part of the learning community. This means that the museum is asked to cede some communicative authority, and to engage, as Brenda Dervin suggests, in true dialogue with their network partners and their constituents, looking to understand and address differences in priorities, beliefs and understandings, instead of pushing out messages designed solely with the museum's own mandate in mind (Agarwal, 2012). This has been a challenging project for the museums. Museums struggled with their roles as conveners of CUSP networks, wondering how they could engage network members in feeling empowered and validated in the network to take ownership of joint activities. Mini-grant funding was used to provide network members with additional opportunities to pursue new ideas that emerged through CUSP work. In one city, over the course of several years of instability in the host museum, the network was able to sustain itself in spite of many leadership changes within the museum partner. Across all of the museum partners, we have seen that the CUSP network process has been able to inform future projects, both in the development of new educational work with existing network partners and also in the use of the CUSP framework for determining strategic areas of work in museum-wide activities.

Extending the work

By reviewing climate change exhibition examples and seeing how the message has been softened, generalised and otherwise limited due to the influence of politics helps us to reflect on the best ways to make use of limited museum communication resources in order to make more significant impacts on community change.

Exploring the issue of climate change in museums illustrates a real challenge for those who work in museums and feel strongly committed to the social charge suggested in the Declaration of Interdependence – for museums to be a stronger voice in the global scientific community that is fighting for change to protect the future of the planet. Museums have long traded on their role as a non-biased source for authoritative information, but these examples highlight the complex negotiations that are at work behind the design of exhibition experiences. Creating a message that balances the needs for content and curiosity, funders' requirements and fun, within a context of a market-driven edutainment enterprise, is difficult. Figuring out which audience, and how to successfully target the appropriate audiences, makes the process even more complex.

In this chapter I wanted to bring together extended exhibition examples and examples of educational practices for several reasons. Critical museology has been used to expose the complex political workings of exhibitions, and having detailed examples of our work is important for the field. Too often museums think of their impact in terms of the visitor who walks through the door, and success on the admissions income generated. In the past, exhibitions were the only place where a museum connected with their audience. In this time of our rapidly changing media landscape, an onsite exhibition experience is but one of many potential locations for a connection. It may be that museum dynamics have not yet begun to align financial models with these new realities. As our exhibition examples suggest, providing a content-rich exploration of controversial or difficult content is not necessarily in line with the desires of a day visitor. And with a topic like climate change, where the science, the impacts and public attitudes change so quickly, exhibitions can be out of date the day they open. For museums to remain relevant as an educational or civic partner in a community, they must find a balance between serving the needs of a casual family or social audience and the demands of providing trustworthy and timely scientific information.

The CUSP project extends how we think about our work in museums in a couple of important ways. Rather than our traditional view of learning taking place at the individual or family level, as we do in a museum experience, the project looks at learning at a community level. Project activities may involve the museum being one step removed from the actual learning situation, and work with network members on how to facilitate these learning activities has important ramifications for learning at the network level. The project asks museums to take on a leadership role in the creation and support of networks, fostering new connections, sharing and hopefully, new communities of practice in the process.

In this process, it is hoped that museums might begin to see themselves not as competitors in a field of limited audiences but as part of an ecosystem of organisations all working to improve the lives of everyone in the community. In this, the museums are redefining their value to the community, not merely providing interpretive content to new audiences, but by working through other organisations to provide resources that tap into authentic needs of their constituents.

Finally, and most importantly perhaps, the new approach enacted by the CUSP project worked to leverage the resources of museums and informal learning organisations to catalyse new discussions about climate change. By focussing on sending resources out of the museum, the project asks museums to think differently about their potential role in the communities in which they live. As the project team grapples with new modes of communication, they encounter issues that raise issues about some of our foundational beliefs about museum communication strategies and the role of museums in our society. Museums are at an interesting juncture, looking for ways to be agents of change while still living within the bounds of institutional frames that value the repository of artefacts and large numbers of visitors through the gate. The climate change example points towards a troubling shift in museum practice but perhaps also suggests a potential way forward to a more energised and relevant community-based focus for museum work.

Notes

1 See Mann (2013) for a discussion of how the hockey stick graph became an influential icon of debates about climate change.

2 One exception in the science museum world was the exhibition "*Race: Are we so different*?" This widely touring exhibition made use of advisory boards and extensive staff training to help support dialogue with visitors and the community (Cole, 2014).

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II.2

Mobile media, mobility and mobilisation in the current museum field

Rikke Haller Baggesen

Mobile media have entered the museum, offering new affordances for museum communication and supporting new modes of visitor engagement. Accordingly, and increasingly so with the advances of smart phone technology, the potential and implications of mobile museum media have been given a great deal of attention by museum technologists and museological research (e.g. Arvanitis, 2005; Tallon & Walker, 2008; Proctor, 2010a, 2015; Katz, LaBar, & Lynch, 2011; Kelly, 2013; Stuedahl & Lowe, 2013; Kidd, 2014; Hughes & Moscardo, 2017; Pau, 2017). As significant as the arrival of smart phones in the galleries, however, is the emergence of a mobile mindset within the museum field. This mindset and its related practises, which can be understood in terms of a "mobile museology," is the focus of this chapter.

"Mobile museology" presents a way to describe and discuss certain movements in the current museum field. As a perspective, it relates to but goes beyond mobile media and the uses of mobile phones in museums, as the notion of mobile also corresponds to wider concepts of mobility and mobilisation. A mobile museum is thus a museum set in motion, an institution characterised by change and organisational agility. Mobility, on the one hand, relates to making the museum mobile by transcending the museum space, physically and virtually. At the same time, mobility denotes a cultural and organisational movement, taking place in the museum field. Mobilisation, in turn, represents the triadic objective of mobilising museum knowledge to make it relevant for a wider, current audience; of mobilising the public to engage with museum heritage; and of mobilising museum institutions to adopt the mobile mindset and engage with digital culture and societal needs.

This chapter will present and discuss this compound perspective through an assembly of theoretical ideas with illustrative examples of mobile museum practices. First, I will address the underlying incentive for being mobile as both a need and an urge to stay current. Next, I will zoom in on the uses and implications of mobile phones in museums. Subsequently, zooming out to see how media are also used to transcend the museum setting, I will then explore how the notion of mobility also calls for an expansion of how we understand the museum field. Finally, I will look at how museum collections, audiences and organisations are being mobilised in different ways, but with the common goal of sharing cultural knowledge and making museums relevant for society.

In the mobile museological perspective, mobile phones are seen as both a concrete medium and an exemplary technology that is emblematic of a mediatised environment (Hjarvard, 2008). Hence, while this contemporary study considers the implications of mobile and digital media as both catalysts and instruments for specific, situated present-day developments, in a more general sense, the mobile museology perspective also exemplifies how museums and museology are (always) set in motion by technological, theoretical and cultural developments. The confluence of technological advancements, changing user cultures, institutional objectives and museological ideas has thus inspired museums to reach out and rethink their missions and practices. By highlighting these movements through the use of a common, multifaceted concept, mobile museology offers a perspective for considering the correlation of particular aspects of current museum practice.

As an inherently transdisciplinary field, museology is well suited to address these interrelated developments. In particular, in addition to the attention given to the experience economy paradigm on museum thinking (Weil, 2012; Weaver, 2007), recent years have seen a notable expansion in the area of digital heritage, drawing on insights and approaches from media and communication studies (Parry, 2007, 2010a, 2010b, 2013; Katz et al., 2011; Giaccardi, 2012; Drotner & Schrøder, 2013a). Moreover, a new wave of "post-critical" museology (Dewdney, Dibosa, & Walsh, 2013) has again put existing practices and museum development at the centre of museum research (Macdonald, 2011), contributing knowledge that may help institutions navigate a new sea of possibilities. While this orientation towards practice is vital, the critical interests and insights of the New Museology (Vergo, 1989; Teather, 1998) are still invaluable for reflective museum practice and scholarship (Marstine, 2006, 2011).

In this chapter, these perspectives are supplemented by understandings from fashion theory (Kawamura, 2005; Svendsen, 2006; Mackinney-Valentin, 2010), presenting a new framework for understanding motivations and change mechanisms in the museum field. Hence, while often focusing on the fashion clothing field, the academic discipline of fashion studies also addresses the processes and implications of fashion as a wider societal phenomenon, showing how a range of cultural matters are affected by trends, corresponding to sociological needs and desires. Thus, institutional developments should not be seen in isolation, but as contingent with the rationales and shifts in the surrounding cultural environment. Therefore, as the desire for the new as an underlying driver of development is as acutely sensed in the cultural world and the digital domain as in the field of fashion, fashion theory can help us understand how the museum absorbs and is affected by digital trends and cultural ideas.

The desire of the new as a driver of museum development

Changing trends, reflecting changing ideals, can be traced across the museum field, e.g. in relation to exhibitionary practices (Schulze, 2014), curatorial interests (Baggesen, 2014b) and even museum architecture (MacLeod, 2013). Technology, too, has been everchanging throughout museum history, and new developments have often been met with excitement and concern in equal measure (Griffiths, 2003; Parry, 2007). According to Parry (2013), however, as digital technologies have now been an intrinsic part of museum practice for so long that digital thinking has become hardwired into some "postdigital" institutions, the persistent talk of digital media within the framework of "newness" in museological research makes little sense.

At this point, therefore, rather than discussing the novelty of digital media per se, it might be useful instead to consider digital museum developments as an example of the wider significance of "newness" in museum practice. Thus, while museums may serve as repositories of the past, they exist in the present and are therefore affected by societal changes and contemporary demands, including the demand to be contemporary, reflecting the now and the new. Indeed, in contrast to Gertrude Stein's (alleged) comment that "You can be a museum, or you can be modern, but you can't be both" (as cited in Dercon, 1999), present-day museums are required to be exactly that.

Accordingly, museums today are faced with the challenge of navigating a technological field that is rapidly evolving. The postdigital condition is thus not simply a matter of "going digital" once and for all or shifting to a "perpetual beta" mindset, but also of perpetual assessment of or experimentation with a steady stream of newly introduced platforms and technologies, and, not least, meeting the expectations of a public switched-on to the latest tech trends. Museum communicators, educators and technologists as well as museum researchers are therefore working to understand the significance and complex uses of digital media for information seeking, meaning-making, social interaction and entertainment in society, to adapt communication strategies to existing user cultures and make best use of digital affordances for museum missions. Yet, as documentation struggles to keep up with the speed of innovation, developments are also affected by the hype following launches of new technologies or platforms:

> We have learned that the scope for digital work is vast and continues to evolve, and that our collective desire is mutable and at times unpredictable. "Apps, apps, apps – we must have an app!", "Augmented Reality – that's the new thing. We've got to get us some of that", "Touch-activated tables. They're really nifty – shouldn't we get one for our next exhibition?!" The examples are legion, and the eagerness to burn money on the latest thing is huge. (Wang, 2014, pp. 180–181)

Thus, while examples such as mobile applications, augmented reality and touch tables each represent unique affordances that may successfully be leveraged for museum mediation, the adaptation of these technologies is also driven by a perceived need to keep abreast as well as a simple desire for the new.

According to fashion scholar Maria Mackinney-Valentin (2010), this craze for novelty corresponds to the modernist fascination with the new as a sign of progress, but also with a postmodern experience of the "failure of the new," a feeling of meaninglessness and lack of satisfaction that leads to perpetual lust for new impulses. As each new technology or platform promises new opportunities for museum communication, while many new services in reality turn out to disappoint in terms of experience or uptake, both of these factors are found in the museum field. Moreover, as noted by Lister, Dovey, Giddings, Grant and Kelly:

> the "new" in new media as a reference to "the most recent" also carries the ideological sense that new equals better and carries with it a cluster of glamorous and exciting meanings. The "new" is also "the cutting edge," the "avant-garde," the place for forward-thinking people to be. (2003/2006, p. 11)

Digital innovation thus presents not only a solution to a practical or communicative need, but also an added signal value, marking (sometimes explicitly marketing) the museum as up-to-date with culture and technology. Moreover, and ironically, whereas musealised artefacts appear timeless in their representation of times past, digital museum technologies date rapidly, meaning that even the most "bleeding edge" media are eventually destined for the museum of past museum technologies. As a consequence, museums may feel compelled to replace serviceable but out-dated technologies and mediation formats with newer models, simply to avoid a sense of staleness.

Thus, technological trends do affect the museum space as well as museological practice and discourse, as museums take inspiration from each other (Sanderhoff, 2014b), following the lead of pioneering institutions, copying successful concepts and learning from the experience of fellow practitioners. While different institutions take different approaches, certain strategies – being also rationally motivated in accordance with institutional objectives, learning potentials and cultural tendencies – gain prominence, while others are soon forgotten. However, as is also the case for fashion clothing (despite its reputation of ruthless dismissal of last season's looks in favour of "the new black"), trends in museum technologies and strategies are not simply a case of one dominant wave after another, of *in* vs. *out*. Instead, as suggested in Mackinney-Valentin's study of trend mechanisms, we may see the development of digital trends in the museum as an "organic and sprawling" process (Mackinney-Valentin, 2010, p. 192), a dynamic evolvement and ebbing out of particular tendencies, distributed spatially as much as temporally.

Either way, keeping up with the fast-paced evolution of digital media and use cultures is demanding and requires insight, resources and dedication. Not least, it requires a willingness to embrace a condition of perpetual change and a new set of ideas. Hence, this dynamism and readiness for change is (cast as) a necessity for keeping up with a changing society, including changing technologies and use practices. Following this argument, being a modern, progressive museum organisation means moving with the times and being organisationally mobile; that is, movable or in a state of movement – embracing a mobile mindset.

Mobile media in the museum

The accelerated evolution of mobile technologies, as well as the entanglement of social/mobile media with the digital culture complex that together inspire rapid adoption and innovative uses of smart phones for museum purposes, makes mobile communication strategies an interesting focal point for examining the wider conception of a mobile museology. Hence, as our daily lives and social interactions have increasingly become permeated by our use of mobile, social and online media (Ling, 2004, 2008; Castells, Fernández-Ardèvol, Qiu, & Sey, 2007; Deuze, Blank, & Speers, 2012; de Souza e Silva & Sheller, 2015), so museums have learned to inspire and engage with a networked audience through these channels (Kelly, 2013; Drotner & Schrøder, 2013b; J. H. Smith, 2015). Thus, the privileged position as personal media, along with the unique possibilities for augmenting the museum experience resulting from advanced technology including cameras, Bluetooth technology and GPS software, has made the smartphone an attractive platform for museum communication. Accordingly, writing in 2010, Nancy Proctor proclaimed that "[w]eb apps and iPhones are the latest great hope, and offer exciting new ways of reaching audiences on-site and beyond" (2010a, section "It's not about the technology," para. 3).

As noted above, different institutions have adopted different strategies for mobile communication, yet a few prevalent approaches can be seen across the field. The most widespread solution, tailoring informative content for smart phone consumption to serve as a guide to the museum or to enrich the experience of a specific exhibition, is now common practice. Many institutions have also embraced the opportunity to rethink the traditional tour format, however, as suggested in Proctor's instructive guidelines for designing for mobile (Proctor, 2010a; cf. Tallon & Walker, 2008). Other projects have successfully managed to break with the tour format altogether. And just as museums have been keen to experiment with new concepts for mediation, so the combination of tech and heritage has appealed to digital developers, resulting in a multitude of inventive designs.

Some of these take a playful approach, as in the case of *Tate Trumps* – modelled on the popular card game Top Trumps – or *Magic Tate Ball*, that combines information about location, time of day and local weather conditions, to present you with an artwork from the collection to match your surroundings. Others, such as Museum of London's *Streetmuseum* app, use location software and camera-based AR technology to overlay historical images onto present-day streetscapes, while the *Vizgu* app employs object recognition software to provide information about artworks in the National Gallery of Denmark. Another notable orientation is found in projects inviting users to engage in conversation with museum curators, such as Brooklyn Museum's *ASK!* application or the recurring cross-institutional #askacurator event on Twitter.

Interestingly, despite such inventiveness, and in contrast to the popularity of mobile phones for personal and social media communication outside and even in the galleries, getting the public to use the mobile interpretation tools offered by museums has turned out to be as big a challenge as upholding former prohibitions against the use of mobile phones in museums (Proctor, 2010a; Katz et al., 2011; Sanderhoff, 2014a). Nevertheless, while the early-day excitement around museum apps has faded, a mobile phone may still prove an invaluable tool for enhancing your museum visit, whether or not you choose to engage with institutional offers.

Documenting experiences on social media and posing for museum selfies has thus become part of the museum visit, at least for a significant section of museum audiences; a practice which may be viewed as both communicative engagement (Budge & Burness, 2017) and as a form of identity work (Kozinets, Gretzel, & Dinhopl, 2017). If the dominance of visual appeal over other types of sensory experiences in traditional exhibitions can be otherwise problematised (e.g. Hooper-Greenhill, 2000), at least in the context of visual social media culture, museums' combination of aesthetic displays and cultural capital has thus proven to be a winning formula. Consequently, just as mobile phones have become visibly prominent in the museum space, so museums and galleries have gained a strong presence on visual platforms such as Instagram, thanks to uploads from the public as well as from museum communicators, who have been quick to adapt to evolving social media practices (Kelly, 2013; J. H. Smith, 2015; Wilson-Barnao, 2016). As such, these developments in mobile communication strategies illustrate the institutional agility implied in the notion of mobile museology.

As the mundane habits of social media communication have entered into the museum context, and audiences have begun to "hack" the museum experience (Mendes, 2015), however, the traditional notion of the museum as a privileged space for hushed reverence and contemplation has also become challenged by the changes of behaviour resulting from mobile and social media culture. While the actual problem with overeager photographers may be exaggerated, heated discussions about mobile etiquette and the virtues and vices of museum selfies have been doing the rounds in the general media as well as in the museum twitterverse and blogosphere, where the question of mobile media in museums has sometimes become invested with notions of "culture wars."

In this way, mobile media have not only presented museums with an opportunity to design for new experiences and rethink how to communicate institutional knowledge to their visitors. In a more profound sense, the spontaneous entry of mobile media habits into the museum has reopened the question about who has the right to define how to experience the museum.

Mobility: Transcending the museum space

But just as mundane behaviour is spilling over into the museum space, so museums are increasingly beginning to transcend their physical premises to offer cultural experiences online, on location or to-go. The *Streetmuseum* app, mentioned above, is one example of this approach, while other strategies, calling attention to local history and places of interest through city walks, mobile interfaces, augmented reality or social media campaigns, are examined by e.g.

Arvanitis (2005), Stuedahl & Lowe (2013), Sharples, FitzGerald, Mulholland, & Jones (2013) and Liestøl (2014).

That museum mobility is more than a matter of mobile media, however, is illustrated in Bautista & Balsamo's mapping of contemporary spaces of museology:

> Museums utilized early versions of mobile technology in the 1950s with handheld devices based on a closed-circuit shortwave radio broadcasting system. The real innovation in new museology, however, came when mobile communications were applied to new populist practices that took the museum experience out of the physical place. Today the "mobile museum" consists of satellite museum spaces around the city or the globe, museum programs conducted off-site by museum staff in schools, libraries and community spaces, and special vehicles designed to provide a multi-media learning experience based on museum collections that travel to schools and other organizations throughout the city. In the past decade, the "mobile museum" has morphed into what we call the "Distributed Museum": a postmodern formation through which the modern museum seamlessly adapts its traditional functions and spaces to the new cultural environment of the digital age. (2011, section "From place to space," para. 4)

While Proctor (2015) similarly speaks of a "museum as a distributed network" in reference to an online network of media platforms, Bautista & Balsamo thus propose that new practices of mobility have contributed to the transformation of the museum from a place-based institution to a dispersed and practiced space (2011, with reference to de Certeau). Hence, not only is the museum space transformed by changing practices, it is also potentially present wherever practiced in public and private spheres.

Today, therefore, museums increasingly seek to become part of and relevant for the everyday life of their publics (Black, 2012; Simon, 2016). Creating social events and cultivating museum spaces as recreational hangouts; reaching out to educational institutions and local communities; and generally making museum artefacts and knowledge approachable and comprehensible for a wide audience; all these initiatives can be seen as strategies for breaking down museum walls, metaphorically speaking, and converting the temple of the muses to a welcoming public space, and, conversely, make the museum present in the everyday (Cameron, 1972; Hooper-Greenhill, 2000; Proctor, 2010b; Sanderhoff, 2014b.).

The mobility perspective is thus also connected to a growing museal interest in the everyday, mirrored outside the museum field by an impulse to curate the quotidian. The miniscule "Mmuseumm," for example, exhibits prosaic objects in a disused New York lift shaft as well as on Instagram, presenting itself as a "natural history museum about the modern world." In a similar vein, the "Museum of the Mundane" (actually a clever campaign advertising the conceptualising design agency) attaches museum-style labels to urban objects like ATMs, manhole covers or traffic lights around London and New York, to highlight the significance of design. This promotion of the ordinary is reminiscent of Nobel laureate Orhan Pamuk's "Modest Manifesto for Museums," stating that: "We don't need more museums that try to construct the historical narratives of a society, community, team, nation, state, tribe, company, or species. We all know that the ordinary, everyday stories of individuals are richer, more humane, and much more joyful" (2012, §3). Together, they show up a pattern of interest in common experiences, a "re-enchantment" of the mundane (cf. Huyssen, 1995; Gumbrecht, 2006) and a blurring of the boundaries between museums and the surrounding society.

As argued by Arvanitis, "museums can use mobile media not just to leave their walls to enter the everyday, but also to disclose the everyday that usually goes unnoticed" (2005, p. 255). Moreover, he states, mobile mediation strategies may not only serve as extensions of the museum, however, but could also be used to bring the voices of the everyday into the museum. For that to happen, however, museums need to mobilise the public as stakeholders in the museum mission and be willing to share the ownership. Thereby, according to Proctor:

> [t]he museum as distributed network is a persistently radical, rather than temporarily revolutionary, model not only because it gives voice to the silenced, but also because it decentres traditional structures of power, enabling relations both hierarchical and rhizomic between its nodes (people, communities conversations) and their connectors. (2015, p. 521)

As illustrated, mobile media have provided a useful tool for elaborating on pre-existing trans-museal practices, helping museums extend their reach and make their knowledge available in new contexts outside the museum building. Now with technological amplification, natural history can be studied in the wild, sites of historical significance can be brought to life, and art and design can be mediated in the urban space. But the transcendence of the physical museum can also take many other forms, in which the museum blends into everyday environments in partnership with local communities.

Fundamentally, the notion of museum mobility therefore reflects a new way of thinking of museums not in terms of bricks and mortar buildings or even as collections of objects and artworks, but as an inclusive practice where the museum becomes an actor or node in a distributed network of knowledge. Such a notion may prove challenging, not only to an audience that may still think of museums primarily as places to visit (cf. Falk, 2013), but also for museum institutions, as the implied symmetry between the musealised and the mundane, and between expert and everyday knowledge, upsets traditional cultural hierarchies.

Mobilisation: Of collections, audiences and institutions

The interest in breaking down the barriers between museums and the surrounding society is rooted in a long-running ambition, ignited by the protest movements of the ’60s and ’70s, to remodel the museum institution in opposition to earlier associations with exclusivity, elitism and authoritarianism (cf. Cameron, 1972; Mairesse, 2007/2010; Weil, 2012). However, having lost – or deliberately left – their former position of privilege, museums today need to work hard, and work differently, to legitimise their cultural status and show their relevance for society. Hence, as described by critical theorist Andreas Huyssen:

> there is now a verb “to curate,” and it is precisely not limited to the traditional functions of the “keeper” of collections. On the contrary, to curate these days means to mobilize collections, to set them in motion within the walls of the home museum and across the globe as well as in the heads of the spectators. (1995, p. 21)

The various strategies for mobile mediation, referenced above, as well as all other exhibitionary or communicative strategies onsite, outside or online, can thus be seen as an effort to actualise museum collections and institutional knowledge, to make it relevant and meaningful for a current-day audience.

In keeping with both the expectations of the experience economy (Pine & Gilmore, 1998) and the inclusive and constructivist ideals of new museum practice (e.g. Hooper-Greenhill, 2000; Simon, 2010), mobilising museum knowledge has increasingly come to mean engaging, as opposed to lecturing to, the audience. Furthermore, the *ICOM Cultural Diversity Charter* explicitly calls for museums to work for inclusion, diversity, innovation and also participatory democracy: "To promote enabling and empowering frameworks for active inputs from all stakeholders, community groups, cultural institutions and official agencies through appropriate processes of consultation, negotiation and participation, ensuring the ownership of the processes as the defining element" (ICOM, 2010, §2).

Hence, museums need engagement from the public in order to comply with these principles and meet institutional and political objectives. They must therefore work to mobilise the public to take part in outreach initiatives and co-constructive practices, such as crowd-curation (Bernstein, 2008), citizen science and crowdsourcing tasks (Ridge, 2014), remix and dialogue projects (Sanderhoff, 2014a) or Wikipedia edit-a-thons (Roued-Cunliffe, 2017).

As indicated by these examples, increasingly – if by no means exclusively – the engagement objective is realised with the help of digital means and with inspiration from digital participatory culture (Jenkins, 2006; Simon, 2010) and digital ideologists (Sanderhoff, 2014a). Mobilisation of the public is therefore often associated with (social) media, whose interactive features are discursively constructed as particularly conducive for civic engagement (Lister et al., 2003/2006; Meecham, 2013). Hence, as argued by Axelsson, "[t]he concepts of participation and interactivity are often intertwined in highly normative and persuasive discourses according to which the technological solutions for interactivity will translate into more active forms of participation, even in the field of traditional governmental politics" (2011, p. 163). Similarly, "audiences" are recast and activated as "users," following digital jargon and reflecting an ideological investment in notions of activity, expression and (social) interaction as preferable to (passive) observation (Axelsson, 2011; Holdgaard & Valtysson, 2014).

Seeing how, in these efforts and in this discourse, the social obligations of museums are conflated with the (increasingly contested) democratising potential of digital media, it is clear that digital ideology, as much as digital technology, has had a profound impact on how museums understand their role and relationship with the public. Hence, according to museum educator Mike Murawski:

> we can no longer unplug the effect of digital technologies and Internet culture on the ways we think about and re-imagine museums today. If the lights go out in the museum and all the Wi-Fi hotspots and screens go dark, we might lose the physical technology infrastructure, but we do not lose the powerful participatory, networked, open source culture that has taken root in our audiences and communities in the 21st century. (2015, p. 209)

Murawski's essay derives from the *CODE|WORDS: Technology and theory in the museum* anthology (Rodley, Stein, & Cairns, 2015), which started as "an experiment in online publishing and discourse" on the dialogical post-blogging platform *Medium*. The original format is thus in itself interesting, as an example of the digital imprint on museum thinking and practice (and an inspiration, perhaps, also for the academic museological community). The collection of essays is written by and primarily for museum practitioners, and, like the *Sharing is Caring* anthology (Sanderhoff, 2014b), aims to inspire both action and reflection in the museum field. Of course, these informed and balanced writings also address challenges and concerns. Nevertheless, the overall message is clear: that the world of today is transformed by the World Wide Web, and that museums must get with the digital programme to stay relevant and make this a change for the greater good:

> The future is ready for us now; hungry for our resources, craving our expertise, listening for what we have to say. It is our obligation – our *privilege* – to respond and serve. A few brave institutions lead the way, but even they must race to keep up. (Edson, 2014, p. 15)

What transpires in these volumes, and across conference fora, museum blogs and #musetech twitter streams, is thus an ongoing effort to mobilise museum institutions to "embrace digital" and (thereby) effect social change.

The drivers of this discourse are museum technologist and digital curators and educators seeking to inspire and engage colleagues and management, in order to accelerate digital developments. Hence, while postdigital institutions (cf. Parry, 2013) may already have been profoundly changed by the implementation of digital practices and technologies, these practitioners argue that an even more radical change in attitudes and actions with regards to openness, inclusion, agility and impact is still needed (e.g. Sanderhoff, 2014a; K. Smith, 2014; Stein, 2015; McKenzie, 2015). While museum debates have always been imbued with ideology, what is new in this particular discourse is the linking of social objectives with digital ideals and infrastructures. In the words of Ross Parry (2017), what we see is thus a movement towards becoming "digitally purposeful," that is, using the power of digital technologies to fulfil museum missions and live up to social and societal responsibilities.

While this movement may be gaining momentum, the compulsion of a collective of digital champions to motivate their peers is, however, also fuelled by a fear of stagnation or sense of *im*mobility and hence a sign of continued resistance and ambivalence in the museum sector regarding institutional change and digital developments. The concept of mobilisation, understood here as the triadic ambition to amplify collections, to activate audiences and to advance a responsive and responsible digital mindset in museums, is therefore also – inherently – related to potentially conflicting ideas and interests.

Hence, while the idea of mobilising collections may not be contested in and of itself, the strategies for doing so can be, as evident in the recurring debates decrying populist programming and rampant technophilia. Similarly, the ambition to engage the public as collaborators and stakeholders is not necessarily met with a similar level of enthusiasm by the invitees. Moreover, the role of the museum as solicitor and owner of the exchange is problematised (Lynch, 2010), as are the assumptions around the democratising powers of social media for civic empowerment (Baggesen, 2014a). And while the altruistic ethos of OpenGLAM (Sanderhoff, 2014b) and similar initiatives are clearly in keeping with the core mission of museums, is still an open question whether digital investments, participatory projects or mobile expansions, for that matter, are really the best way to realise the potential of museums in the 21st century. As such, the mobilisation perspective speaks to the ongoing experimentations and negotiations about how to be relevant and how to move forward.

Conclusion: Implications of mobile museology

Mobile museology rests on the understanding that museum change is not so much a matter of metamorphosis, in the sense of realising an inherent, ideal potential once and for all, but of perpetual morphing and moving with a changing world – being mobile. In this chapter, I have argued that modern-day museums are set in motion by a convergence of technological and cultural developments with museological and political ideals. What we see is thus a movement that is simultaneously inspired from within the museum, in keeping with the obligation to be in service of knowledge and society and the need to stay current and relevant, and stimulated by external pressures and possibilities, in particular the fast-paced evolution and inherent ideology of digital culture and technology. In this perspective, we can therefore understand digital technologies, i.c. mobile media, as both instruments for and catalysts of a changing museum field. I have furthermore suggested that a desire for the new, as explicated with reference to fashion theory, is one of the driving factors in this development, to explain how the significance of technology in museums is not only related to communicative potential, but also to cultural currency. Moreover, the need to stay abreast means that institutions are encouraged to adopt a responsive, mobile mindset.

One of the most notable trends in museums over the past decade has been the interest and innovation in uses of smart phone media for museum communication. As illustrated in the *Mobile media in the museum* section, institutions have employed very diverse strategies for supporting the museum visit with mobile interfaces. As importantly, museum visitors are now using mobile media to explore museums on their own terms, also as part of an ongoing engagement through social media. While mobile phones have thus opened up for new types of museum experiences, they have also challenged the traditional museum ritual as well as the institutional monopoly on communication.

Mobile media have also been valuable for museums in their efforts to distribute knowledge and call attention to nature, art and heritage in original contexts. In this chapter, I have used the notion of mobility to describe this move to transcend the institutional setting and engage with the everyday. What is implied in this move, however, is also a blurring of power relationships and cultural boundaries, and a radical rethinking of the museum as practice rather than place.

Finally, as described in the mobilisation section, curatorial, educational and communicative practices are already changing, to support both intellectual and practical engagement. Hence, with inspiration from digital participatory culture, museum communities are being invited to engage in dialogue and participate in co-creative projects on-site or online. Such initiatives have already had a notable effect on how museums act and understand themselves. However, a core of museum thinkers argue that the impact of museums could be greater still if only institutions learned to harness the powers of the Internet. The concept of mobile museology suggests that we see these developments as interrelated. What the concept represents, is, however, not a fixed model of museum developments or of the interrelation of museum and media. Rather, it is an illustration, highlighting the connections between particular aspects of current museum practice, taking place in a dynamic and fluid interchange between institutions and technologies, cultures and ideologies.

Mobile media have thus created an impetus for museums to think outside the physical framework, and have also, in a very tangible way, brought connected and creative digital culture practices into the museum space. In this sense, mobile media have both required and inspired organisational mobility. The mobilisation dimension, however, reminds us that this development has not happened in isolation and is not simply an effect of media affordances. Instead, digital technologies and digital ideology have taken root in museums because they correspond to particular museum objectives and museological ideals. Hence, not only do digital technologies ease curatorial and administrative tasks; the values and practices of mobility, dialogue, openness and participation are also a perfect match for museums' commitment to create and disseminate knowledge and to secure inclusion, diversity and relevance. As these aspects of museum work have gained a greater prominence in recent years, so the attention given to the potential of digital media to support these objectives have similarly increased. But the unique value of museums in society is also still linked to material collections and to the atmosphere and architecture of the museum as place; qualities that are not easily translated into binary code. Moreover, audiences are sometimes even more conservative than museum management when it comes to finding new ways to engage with heritage. Therefore, while the interests and instruments of digital culture and museum culture may overlap, they also differ in significant ways. How digital, mobile and social media can be used as means for museum missions, and how much digital culture and technology should be allowed to influence museum practices and understandings, are therefore questions for an ongoing debate, resulting in ongoing experimentations into how to be a modern-day museum. Meanwhile, society and technology moves on, and mobile museums move along with them.

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II.3
Learning and engagement in museum mediascapes

Palmyre Pierroux

Rapid developments in digital and mobile technologies have intensified what is historically a long tradition of material experimentation with display and communication in museum buildings and galleries (Brenna, 2014; Klonk, 2009). As encounters with collections are extended and distributed by such digital means as mobile devices, social media platforms, beacons and ubiquitous Internet access, distinctions between experiences of material and virtual displays and objects are becoming increasingly blurred. Kidd (2014) conceptualises these developments as *museum mediascapes*, and in recent years implications of new forms of museum communication and design have been explored from a range of perspectives (Drotner & Schrøder, 2013). As with other sectors tackling the impact of emergent media developments on established practices and institutions, questions are raised about how museums may stay relevant for the communities and citizens they serve (Simon, 2010; Kidd, 2014), and how they may foster trust, diversity and democratisation through new forms of learning and engagement (Laws, 2015).

In this chapter, there is a focus on how opportunities for visitor learning and engagement are constructed in museum mediascapes and how these may be studied from a "meaning making" framework. The term "meaning making" (Wertsch, 1991) is used to highlight the significance of personal agency, identity and social interaction in processes of appropriating knowledge, and to make a distinction from the primary emphasis on mastering knowledge in specific subject domains, as in schools. Meaning making is proposed as a concept to frame studies of learning and engagement in museums, both because these are public spaces with collections and exhibitions of artefacts that are uniquely rich with meaning and signification, and because museums are frequently experienced as open-ended, interpretative cultural encounters (O'Neill & Wilson, 2010) by people without a specific learning agenda (Crowley, Pierroux, & Knutson, 2014). Moreover, although school field trips to museums are often framed by formal learning goals, studies also point to the significance of students' out-of-school literacies when digital media and tools are introduced as learning resources in field trip activities (Bakken & Pierroux, 2015; Pierroux, Krange, & Sem, 2011). The concept of meaning making thus provides a lens for studying more broadly the ways in which digital media and other cultural tools engage visitors in exhibitions in museum settings, without being constrained to formal/informal learning classifications. Interestingly, the idea that museums are ideal "test beds" for innovative media design aligns with greater policy focus on the museum's societal role as an educational institution and increased professionalisation of museum curators specialising in education (Crowley et al., 2014; Dobbs & Eisner, 1987). In the museum sector, education curators are thus challenged to develop an expanded and updated view of knowledge, learning and learners (Bevan & Xanthoudaki, 2008), prompted not least by developments in digital content, social media and their use in designing learning experiences for gallery settings, interactive websites and online archives.

A particular challenge for learning and the "educational turn" in curating (O'Neill & Wilson, 2010) is competition for wilful, voluntary attention (Leont'ev, 1994; Vygotsky, 2004). Voluntary attention, or what Lawson & Lawson (2013) call attentional engagement, is understood as culturally developed and entails an experience of exertion that flows from the mastery and control of attention (Leont'ev, 1994). Given today's globalised and ubiquitous access to information and entertainment, the audience's ability to produce or withdraw attention is an important curatorial and design consideration in museums. For this reason, museum mediascapes are ideal sites for exploring how encounters in art, cultural heritage and science museums facilitate attentional engagement and other skills needed for learning in the 21st century, such as planning, implementing and evaluating one's own learning processes, and being inquisitive and persevering in self-directed learning (Ludvigsen, 2015). Importantly, these skills are not only related to educationally framed academic subjects but are part of what Erstad, Gilje, Sefton-Green and Arnseth (2016) term "learning identities." This concept describes the ways in which interests, knowledge and engagement become activated and facilitated in ways that are significant for learning trajectories throughout a lifetime. This chapter aims to clarify the importance of museum mediascapes as arenas for educational research on learning identities and the development of 21st-century skills.

The meaning making framework, presented in detail below, is developed to explore the main question posed in this chapter: how do features of museum mediascapes construct opportunities for visitor learning and engagement? The theoretical framework draws on sociocultural research and findings presented in a recent review of learning research on engagement (Lawson & Lawson, 2013), in which three types of engagement are identified: cultural congruence, cultural correspondence and cultural relevance. I use this framework to relate key developments in museum mediascapes – in art, science and history museums – to the study of meaning making in these settings.

A perspective on meaning making

Sociocultural roots

Visitors become engaged and attend to features in museum exhibitions when these are experienced as relevant, whether alone or as part of sharing experiences in a group (Leinhardt & Knutson, 2004). In her new book, *The art of relevance* (Simon, 2016), American researcher Nina Simon refers to two key aspects of relevance theory from a "cognition and communication" perspective (Wilson & Sperber, 2004) to discuss how museums might better address the challenge of engaging audiences in learning activities and museum events more broadly. According to this theory, Simon explains, relevance is achieved when the communicative intention 1) stimulates positive cognitive effect through information that yields "new conclusions that matter to you" and 2) is obtained and absorbed through the least amount of effort (Simon, 2016, p. 32). To "matter," then, involves a process with affective and cognitive dimensions that make it possible to build on previous knowledge, in the sense of cognitive change or learning something new. Simon extends these general principles in relevance theory to form a broad framework to discuss museum projects, many of which are oriented toward fostering large-scale community engagement. However, as a theory primarily concerned with mapping interpretation from a single speaker's informational intentions to a single hearer's comprehension (Wilson & Sperber, 2004), it does not address the analytical challenge of understanding how relevance is constructed through participation in social structures and institutional settings.

It is in this regard that a sociocultural approach augments notions of relevance based on classic conceptions of affective and cognitive engagement, by allowing one to relate individual psychology to sociohistorical contexts or "activity settings" (Wertsch, 1985). Sociocultural perspectives were introduced in museum learning research in the late 1990s (Hein, 1998; Schauble, Leinhardt, & Martin, 1997) and have since gained broad acceptance, introducing new areas of inquiry into the role of physical contexts and social interaction for meaning making in museums. Sociocultural approaches focus on mediated human activity, whereby analyses include the cultural and social organisation of the context in studies of learning. Vygotsky's (1978) "general genetic law of cultural development" situates the very genesis of thought-language relations in the social plane:

> Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition. (Vygotsky, 1978, p. 57)

Applying Vygotsky's genetic approach to the study of museum mediascapes directs attention to how digital resources, museum settings and social practices (sociogenetic level) mediate visitors' learning and engagement (ontogenetic level). What are the meditational features of museum mediascapes, and how do these features structure opportunities for visitor learning and engagement?

Sociocultural studies of engagement

In their review of learning research on engagement, Lawson & Lawson (2013) use this genetic approach to organise their discussion of studies that include "sociocultural indicators of engagement." Although the studies reviewed have primarily examined student engagement in higher education, the findings are relevant for this discussion. First, they identified studies of engagement that focused on interaction as it unfolds on a "second by second" basis, or on a microgenetic level. Lawson & Lawson (2013) explain engagement at this level as cultural congruence: "the degree to which students experience support for their social-cultural and personal identities *while participating* in activity" (p. 446). It is at this level that media designs support attentional engagement requiring minimal effort. A second sociocultural indicator of engagement identified is termed cultural correspondence. This is engagement specifically linked to learning, and "the extent to which a particular task, activity, or setting socially and/or cognitively activates and/or connects with students' prior knowledge and experience" (Lawson & Lawson, 2013, p. 447). Studies of visitors' learning in museum exhibitions using media that distinguish between different levels of expertise would be an example of how this concept could be applied analytically. The third sociocultural indicator of engagement identified in the research is termed cultural relevance, which ties the experience of an activity's personal significance (it "matters" emotionally and cognitively) to one's sociocultural background. This activity aligns with and supports an individual's identity construction and lifelong developmental trajectory. From a learning perspective, cultural relevance might be experienced through media platforms that support personalisation and identity-building over time and in a community.

Importantly, in contrast to engagement research on mental processes that presumes a temporal sequence of context→motivation→engagement→outcome, a review of findings from sociocultural studies suggests that contexts mediate engagement in "a complex and nested arrangement of social-ecological features and processes" that may differ according to subpopulation and institutional features (Lawson & Lawson, 2013, p. 444). Such nested features include engagement with "various tools/objects/technologies (e.g., computers), tasks (e.g., labs/assignments), activities or disciplines (e.g., dance or math), people (e.g., peers, teachers, coaches) and places/social settings (e.g., school or community agency)" (Lawson & Lawson, 2013, p. 444). By closely analysing visitors' interactions in museums as they unfold, it is possible to unpack how these levels are connected (Maxwell & Chmiel, 2014).

In the section below, I present a framework for understanding how museum mediascapes, as activity settings, structure visitor engagement at these different levels: cultural congruence, cultural correspondence and cultural relevance. References to recent studies of museum media designs are used to illustrate the concepts rather than for systematic review purposes. Following this, interactional data from an empirical study in a national art museum are analysed applying the multilevel framework.

Sociocultural indicators of engagement

Cultural congruence

Linked to research on attentional engagement (Lawson & Lawson, 2013), cultural congruence is important for learning in museums in that visitors "become actively engaged in learning the moment an artifact or museum object attracts their interest" (Banz, 2008, p. 50). To understand how museum mediascapes may be organised to support *meaning making* through cultural congruence, Steier (2014) collaborated with a national art museum in an experiment involving posing and taking "selfies." The threshold for participating in this activity was hypothesised as low because it was culturally congruent with everyday practices. Visitors first noticed a feed of digital photographs on a screen mounted on a gallery wall that depicted other visitors "posing" like artist Edvard Munch in his different self-portraits. As they walked toward the interactive station, their own images appeared on a screen, triggering attention and interactions with the camera before engaging in the posing activity.

In keeping with the meaning making aims for the media design, the study found that visitors closely observed and discussed expressive and formal characteristics of Munch's self-portraits as they carefully positioned themselves and compared different bodily and facial expressions for the picture. In this art museum mediascape, then, Steier (2014) found that the act of participating in the posing activity, as a form of embodiment, fostered meaning making. However, it is important to note that, in contrast to Steier's art museum study, a frequent finding in science museum studies is that visitors engaged in hands-on exhibits have problems learning scientific concepts (Allen, 2004; Atkins, Velez, Goudy, & Dunbar, 2008; Gutwill, 2008). This suggests that facilitating engagement in museum activities that have specific learning goals also entails designing tasks, activities and settings in ways that are sensitive to the disciplinary domain and correspond with visitors' prior knowledge and experience, whether alone or in groups. This is discussed below in the section on cultural correspondence.

In museum mediascapes, sociocultural indicators of engagement as cultural congruence are not constrained to interacting with a screen interface. In fact, there is extensive research on bodily and sensory interactions with objects and exhibits in all types of museums, and European Union research programs have consistently funded projects that experiment with "future" technologies and new paradigms of computing in digital cultural heritage that create interactive environments and spaces for visitors without being tied to the desktop, laptop or similar "fixed" metaphors of the computer. Based on a "natural interface" metaphor (Weiser, 1994), interfaces may be designed to more or less "disappear" during use, whereby gestures and motions seamlessly mediate interactions between human beings, machines and their environment. The idea is that eventually, as with "touching" or "swiping," new human-computer interactions become part of a natural vocabulary of gestures. Responsiveness and different forms of feedback give a sense of control, maintain focus and continue the interaction (Hirsh-Pasek et al., 2015). Human-computer interaction (HCI) research thus frequently attends to microlevel engagement in the design of user experience interfaces for museum settings, including monitoring and adapting the influence of external stimuli-devices on visitors' interactions in exhibition settings. These developments are increasingly used in the growing field of learning analytics and the design of digital learning platforms that provide continuous feedback to promote self-regulated learning, a central "future learning skill" (Ludvigsen, 2015).

Augmented reality experiences using overlay technologies, and virtual reality using 3D simulations and environments, are examples of emerging technologies being designed to provide rich sensory experiences that can adapt to visitors' moment-by-moment engagement. In the project ARtSENSE, visitors wore headsets and used natural gestures to interact with multisensory content designed to augment exhibitions (Damala et al., 2013). The experimental system monitored visitors' engagement using different data, including 3D gaze point computation (Hammer, Maurus, & Beyerer, 2013) and physiological responses (biosignals like heart rate, breath rate, skin conductance level) to "obtain the psychological state of the visitor and determine the level of interest with regards to what the visitor is looking at, or listening to but also in order to determine when a visitor is disengaged" (Damala et al., 2013, pp. 125–126). At this stage of development, "engagement" in such technology-driven experimentation is far from naturally occurring; however, cultural congruence seems central to this trend in the design and research of future museum mediascapes. In terms of meaning making, it is important to note that actions at this microlevel are always embedded in "a complex and nested arrangement of social-ecological features and processes" (Lawson & Lawson, 2013, p. 444), among which are the tasks and resources specifically designed to foster learning in museums. In sum, mediascapes construct opportunities for engagement as cultural congruence through designs that trigger interest and support personal and sociocultural identities *while participating* in an activity.

Cultural correspondence

In museums, the design of learning activities often draws on formal education perspectives and resources. There are historical and practical reasons for this, due not least to the teaching backgrounds of many museum educators and the historical practice of school field trips, which commonly employ worksheets as learning resources (DeWitt & Storksdieck, 2008; Kisiel, 2003). Research on worksheet and fieldtrip practices continues to inform the pedagogical design of media use for learning activities in museums. Mobile applications for mystery games are frequently modelled on inquiry learning approaches, for example, prompting visitors working in groups to formulate scientific questions and hypotheses, make observations, collect evidence and communicate findings (Gutwill & Allen, 2011; Klopfer, Perry, Squire, Jan, & Steinkuehler, 2005). Making videos using cameras in mobile devices is an example of "multimodal worksheets" designed to engage students in learning activities. A study by Bakken & Pierroux (2015) in a science museum found that video tasks designed for a field trip were effective in orienting students toward the scientific principles conveyed in exhibits and in drawing on the exhibits as learning resources. Importantly, the video tasks were carefully designed and tested to also correspond with school curriculum and pre-post visit lessons. The study found that the performative and collaborative activity of making a short video mediated the ways in which conceptual understandings were proposed, challenged, negotiated and eventually revised in the group. In the study presented below, the aim was to similarly explore how established pedagogical principles might be extended and applied to museum mediascapes.

Outside of school field trips, it is frequently argued that it is impossible to control for variation in visitors' previous knowledge and individual learning skills in museum settings, and thus to design for cultural correspondence. Mediascape designs should instead support visitors in taking control of their own learning processes based on what they know or believe about themselves and their knowledge, "recognizing when they understand and when they need more information" (DiSalvo, 2016, p. 4460). Designs to support learning and engagement in complex museum mediascapes are thus increasingly intertwined with developments in technology-enhanced learning (TEL). Museums are included in Scanlon's (2012) typology of areas in which research interests in TEL and informal science learning overlap, and she highlights the role of artefacts and activity in TEL designs that support "remembering and sociality." A clear overlap with TEL research is the design and study of sophisticated systems, particularly for mobile devices, in which content presentations and tasks adaptively correspond to visitors' varying levels of interest or expertise in subjects or exhibition themes to sustain engagement. This may be accomplished through "hint systems" that provide information on cue, scaffolding for different levels of skill in game play, or personalised narratives modelled on visitors' behaviours or profiles. Working with curators, focus groups and learning scientists, often in participatory design processes (Mason, 2015), designs are "concerned with the idea of adapting the selection or presentation of information to a visitor's interests or learning style" (Fosh, Benford, Reeves, & Koleva, 2014, p. 632). Engagement in the form of cultural correspondence is thus achieved by constructing opportunities in the mediascape for closing knowledge gaps on different levels.

Cultural relevance

Museum mediascapes that engage through cultural relevance are experienced as significant on a personal level and resonate with a visitor's socioeconomic and cultural background and interests. In the past decade or so, in keeping with general trends in media strategies in organisations and institutions, social media platforms are often at the core of museums' communication approaches to engage the public in broader societal issues. Social media are recognised for establishing new interactions between museums and visitors, from "liking" and "following" museums' Twitter and Facebook posts to more committed forms of engagement, such as crowd-sourced "transcribing" and "tagging" activities in collection management systems and digital archives as part of citizen science or citizen humanities projects. Studies have found that these new forms of engagement are strongly linked to participants' experiences of the activity as personally and culturally relevant (Eveleigh, 2015; Hetland, 2014; Hillman & Säljö, 2016).

Social media sites also provide museums with data on users' preferences, profiles and behaviour patterns. Nevertheless, as Simon (2016) points out, the success of curatorial approaches to make museums relevant for visitors seems impossible to predict, even when building on audience research and established museum-community relationships. Armed with knowledge or assumptions about what may be culturally relevant for their audiences, museum staff may experience outreach strategies using social media as a kind of "hit-or-miss" endeavor to engaging visitors in museum collections, events and exhibitions. As discussed in the study presented below, researchers and curators have collaborated to explore how dialogical features of social media may be incorporated into museum settings to make content more relevant in visitors' interactions with exhibitions. In a different study, university researchers and curators at an art museum invited visitors to use social media to "write their own labels" with the aim of creating personal relevance (Parry, Ortiz-Williams, & Sawyer, 2007).

Supporting a sense of personal relevance, which emerges from an individual's cultural and socioeconomic background, also underlies aims of designing adaptive features on guided tour applications for mobile devices. Some delivery systems purposefully integrate the social context of a museum experience, by allowing visitors to design paths and tours as "gifts" for others who might share their interests. Fosh et al. (2014) speculate that "personalization algorithms may be able to learn from the examples of deep personalizations that humans make when gifting" (p. 632). Objects and narratives of personal relevance and interests are collected and shared, providing emotional and aesthetic counterpoint to authoritative interpretations in museum exhibitions.

Applying the framework

To explore how this framework may be applied to the study of engagement and meaning making in museum mediascapes, video recordings of visitors engaged in an "interactive activity" are analysed below. The data were collected in connection with a larger research project in which visitors engaged in mediascape activities in a gallery at the National Museum of Art, Architecture and Design in Oslo in 2013. The content, themes and activities were developed in a research-practice partnership that included museum curators, designers, programmers and learning researchers. The shared aim of the project was to better understand how to design social and digital media to support art interpretation in a museum setting (Pierroux & Ludvigsen, 2013).

The curatorial aim of the activity analysed below, titled "My friends," was to engage visitors in exploring the historical and social context of artist Edvard Munch's life: the relationships and friendships that influenced him, as well as their beliefs, interests, writings and artworks. The content specifically centred on Munch's association with artists and writers known as the Kristiania Bohemians, who initiated a political and cultural movement in Kristiania, the capital of Norway in the 1880s (now Oslo). A "manifesto" produced by the artists in 1889, titled *Nine commandments*, was selected by the curator as a text that illustrated how unconventional the views of this group were for the times in which they lived. A copy of the commandments was placed at the centre of a table for visitors to read (Figure II.3.1). In front of each chair at the table was the profile of an artist from the Kristiania Bohemians: Edvard Munch, Hans Jæger, Oda Krogh and Christian Krogh.

In addition to sitting and reading about Munch and his friends, visitors could read an invitation to "tweet a tenth commandment for your friends" using the *Twitter* app installed on a digital tablet attached to the table. *Twitter* was selected as the social media platform for the activity design because of its specific dialogical features. Tweets can express immediate reactions to events or statements, in the sense of primary speech genres, and they can also serve as utterances that respond to other texts and discourses, especially through the use of hashtags, to create a kind of meta-text (Rulyova, 2017). Finally, tweets correspond with the grammatical form of imperative sentences, as in "commandments." Visitors' posts were visible in a live feed on a wall-mounted screen at the head of the table (Figure II.3.2) and also appeared on the museum's website and *Facebook* page. A thorough account of the learning design aims for the activity has been previously described (Pierroux & Ludvigsen, 2013).

Figure II.3.1 "My friends" activity table in experiment room.

Methodological approach

The research team recruited friends (17–18 years old) at an international baccalaureate program in Oslo to participate in an observational study of a museum visit. Eight small groups participated, consenting to the terms of the study in keeping with ethical guidelines. At the museum, each group was instructed to attend to exhibits in the manner most natural to them, with the provision that they visit the interactive gallery where the "My friends" activity was situated. Three randomly selected groups were followed and video recorded by researchers during their entire visit, in keeping with methods from interaction analysis (Derry et al., 2010; Jordan & Henderson, 1995). The young people were Norwegian but spoke English during this visit, as

Figure II.3.2 Multimodal resources included Twitter feed, tablet, texts and pictures.

was customary in their study program. The recordings were transcribed, and two excerpts from one group's interactions with the "My friends" activity are presented below. Parts of this data have been analysed in a different study (Gjone, 2015).

The excerpts were selected from recordings of two young women, named "Clara" and "Helene" for this analysis, toward the end of their two-hour museum visit. The conversational tone and exchanges in the excerpts are in keeping with the overall pattern of talk between the women during their visit. The two excerpts were selected from a sequence of interaction lasting approximately ten minutes to study how the tasks, resources and media constructed opportunities for engagement and meaning making. We enter the data as "Clara" and "Helene" approach the "My friends" table.

Excerpt 1

1 Clara: Should I tweet? (taking a seat)
2 Helene: (also seating herself) It is … you have to do it in Norwegian.
3 Clara: The Bohemians' *Nine commandments*? Eh … (reading). Oh, and they almost made it into this kind of punk thing (moves the tablet in front of her).
4 Helene (laughing and reading task): Oh, you should, like, tweet. Twit. From your own life (looks at the instructions). Right?
5 Clara: Uh-huh. (Helene leans over the table and reads the instructions. Clara observes and points to several words).
6 Helene: Can you … he …
7 Clara: Oooh.
8 Helene: Ok, so you are supposed to be … you're him. And I'm this guy (looking at artist profile in front of her).
9 Clara: Wait (reading commandments), they hated people like Bjørnstjerne Bjørnson?
10 Helene: (shrugs shoulders) That's one of the rules.
11 Clara: It says, you're not supposed to ever regret … (points to a different commandment) "You shall *take* your own life" [italics in original]. Does that mean they should commit suicide?
12 Helene: Yeah. It does.
13 Clara: Munch did not commit suicide.
14 Helene: He didn't?
15 Clara: No, he died of, like, pneumonia or something?
16 Helene: (shrugs shoulders) Ok. But maybe he tried or planned to commit suicide.
17 Clara: Ok. Who are you?

In this excerpt, Clara's attentional engagement is triggered by the invitation to "tweet." Her interest, ease and willingness to participate indicate that the activity is culturally congruent with her use of social media, her personal identity and her idea of what counts as natural behaviour in a museum, as she and Helene immediately seat themselves at the table. Their engagement is sustained while reading the artist biographies in front of them, and the *Nine commandments* on which the tweet activity is based. However, the women are confused about their roles and whose "voice" should be used to write the tweet. The confusion is caused by having an artist's picture and biography before them and ambiguity in the wording of the task: "tweet a tenth commandment for your friends." Understanding the task is a large part of what students do in school (Rasmussen, Krange, & Ludvigsen, 2003), and in this sense, their engagement in negotiating the "correct" approach to the task may be understood as oriented toward cultural correspondence.

However, the task is not the sole focus of interest, as they also express curiosity about the meaning of the different commandments and how to interpret them. This engagement with content may also be understood as cultural correspondence, in that they are clearly able to draw on previous knowledge to make sense of the texts. Clara's surprise at the commandment, "You shall hate and despise all farmers, such as Bjørnstjerne Bjørnson," is linked to her knowledge of Bjørnson as one of Norway's most famous authors from this time. She shows similar surprise when questioning the meaning of the ninth provocative commandment: "You *shall* take your own life" (emphasis in original text). Clara links her reflections on this commandment to Munch, noting that he died from sickness rather than by suicide. In sum, sociocultural indicators of engagement are apparent while the women are participating in the activity (cultural congruence) but also in the extent to which the task, activity and setting activate and connect with

Clara and Helene's prior knowledge (cultural correspondence). The second excerpt transpires a few minutes later, as Clara is taking her turn at the tablet.

Excerpt 2

30 Clara: Ok, I tried … to make one … that fits (moves tablet toward Helene).
31 Helene: "You shall live in the moment" (takes a picture of the tweet while Clara types).
32 Clara: I wanna go online and remove the tweets. I wanna write them in *nynorsk* [new Norwegian].
33 Helene: Nooo. You know they were against *nynorsk*.
34 Clara: I don't care. I'm making my own.
35 Helene: Hey, you can't write like a "commandment" in *nynorsk*. There's more to it than that. Like, I write in *nynorsk* and then you write –
36 Clara: No, I like *nynorsk*. Do you say *levar* or *lever* [living]?
37 Helene: *Lever*.
38 Clara: *Lever*.
39 Helene: You're supposed to represent them.
40 Clara: No, I'm supposed to represent my friends.
41 Helene: Nooo
42 Clara: Or me.
43 Helene: That guy.
44 Clara: Yeah, that says. No, it says make a tenth whatever that suits your friends.
45 Helene: Make for my friends? (reads the paper while Clara types). You're writing a tenth commandment for the Christiania Bohem (puts paper down). Get it?
46 Clara: How do you know?
47 Helene: Cuz they hated it. That's why they hated Bjørnstjerne Bjørnson.
48 Clara: Bjørnstjerne Bjørnson had something to do with *nynorsk*?
49 Helene: Yes.

In this excerpt, tensions between mastery and appropriation (Wertsch, 2002; Pierroux, Krange & Sem, 2011) come into play in the meaning making process and are linked to social media and the use of multiple resources in an interesting way. Clara's reasons for wanting to write in *nynorsk* are unclear. As one of two official written forms of Norwegian, this is a compulsory subject in school that is hotly debated by Oslo students. Many students consider the language irrelevant and difficult to learn. Moreover, *nynorsk* has always had political overtones, intertwined with nation-building by paying homage to Norwegian roots in nature and rural life. In arguing that she is writing for herself and her own friends and should thus be able to choose the language, Clara indicates that there is something personal at stake in her plan to write tweets in *nynorsk*, strongly related to her identity as knowledgeable in *nynorsk*. In the face of new knowledge presented to her about the Christiania Bohem's disdain for both Bjørnson and *nynorsk*, Clara's engagement wavers between "appropriating" the task by making it her own, or "mastering" the task as Helene interprets it based on the resources available. Applying the analytical framework, then, Clara's engagement may be understood in terms of cultural relevance, in that the experience of personal significance (it "matters" emotionally and cognitively) seems to have some connection to her background and identity construction.

Summing up, applying the analytical framework to the excerpts above made it possible to "zoom in" on the *My friends* mediascape and study how features of the activity constructed opportunities for engagement and meaning making on different levels. Indicators of cultural congruence were found in Clara and Helene's attentional engagement, which was triggered and then sustained by the "write a tweet" activity. As discussed above, engagement at this microgenetic level is linked in sociocultural research to the experience of support of social and personal identities while participating in an activity. Indicators of cultural correspondence were identified in Clara and Helene's engagement in understanding both the task and the art historical information about Munch and his friends. Engagement at this ontogenetic level is linked in the research to the ways in which specific tasks, disciplines or settings activate or connect with prior knowledge and experience to support meaning making. Finally, at the sociogenetic level, indicators of cultural relevance were seen in how differing approaches to the activity were disputed and took on personal significance for each of the women, with engagement linked to issues of identity and sociocultural background. As opposed to modelling engagement as a temporal sequence of mental operations, then, the sociocultural framework supported the analysis of how the nested semiotic, disciplinary and social contexts (i.e., texts, tablet, social media, peers, art history, task, setting) mediated Clara and Helene's meaning making.

Mediascapes and meaning making

Museums may be considered media producers (Kidd, 2014) in the sense that visitors seldom experience unconstructed and unmediated encounters with museum objects and narratives, whether digital or physical (Bradburne, 2008). In parallel with media productions for exhibitions by museum curators with disciplinary expertise, computer scientists and learning researchers have used museums as "sites" for design experiments, testing and developing digital prototypes and for studying informal learning and expert practices (Roberts, 1997; Macdonald, 2002; Pierroux et al., 2007). Interests among interaction designers and technology developers have centred on testing hypotheses about user experience and the affordances and constraints of specific features of devices and media formats, such as mobile content delivery systems, interactive tabletops, augmented reality platforms and immersive environments. Learning researchers, alternatively, have focused on how new technologies may facilitate meaning making for different types of visitors and the advancement of pedagogical theories, design principles and practices.

Given that these respective fields mutually inform the research and design of museum media, projects increasingly involve multidisciplinary teams – including museum partners – working together in a purposively reflective way. As described in the case and sections above, explorations in museum mediascape designs are increasingly cohering in multi-professional collaborations, with learning researchers, museum curators and interaction designers working with shared – but also distinct – interests and skills to produce innovations and rich visitor experiences in different settings (Jornet & Jahreie, 2013; Pierroux & Steier, 2016). These collaborations are producing new methods and practices, often involving visitors, participatory approaches and museum-initiated prototyping spaces (Mason, 2015; Pruulmann-Vengerfeldt, Tatsi, Runnel, & Aljas, 2014) to create opportunities for visitors to learn and experience meaningful encounters with art, science and cultural heritage in museum mediascapes. Looking forward, studies of such multidisciplinary research teams will provide insight into how innovation in museum media challenges organisational values, visitor and learning perspectives and the expertise of designers, curators and researchers.

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II.4

The museum as an arena for cultural citizenship

Exploring modes of engagement for audience empowerment

Pille Pruulmann-Vengerfeldt and Pille Runnel

> *"Hi! Let's go and play in the tree house! … Certainly, you have ideas about what the coolest tree house in the world is. But perhaps you didn't have the material, skill or a suitable place to build it. Imagine your dream tree house and draw that on paper."*

This is an excerpt from a text distributed by the Estonian National Museum (ENM) to Estonian school students in the first–sixth grade as part of the #ChillingAroundTown exhibition. This exhibition was the research site wherein children's understandings of urban space through drawings could be explored. The "tree house" emerged as a central concept: several ideas about tree houses were generated, suggesting that this dimension of children's urban space had to be explored in depth (Runnel, 2015a). Therefore, children were asked to share their imaginings of tree houses as a part of urban culture during the iterative ENM research. For the drawing competition, children were asked to imagine that they were architects preparing a construction project that had to include a plan view of the tree house and explanations about the materials, main elements, location and usage of the building.

These tree house designs were not representations of object-oriented design for simply viewing; rather, they represented relational spaces, domains of communal exchange that children as designers intend to become part of. Although the designs were initially meant to be a methodological tool of exhibition production rather than architectural plans to be realized, four tree houses – a house on wheels, a robot hut, a cactus-like single-mould polycarbonate object and a traditional wooden hut – were constructed as central elements in the exhibition space (Figure II.4.1).

The participatory method not only allowed children to tell their stories but also encouraged ENM researchers to carefully listen to their stories so that the children's agendas could direct the museum's exhibit.

This participatory activity at the museum demonstrated the multidimensional potential for engaging audiences in museum-making. It also illustrates how engagement activities can

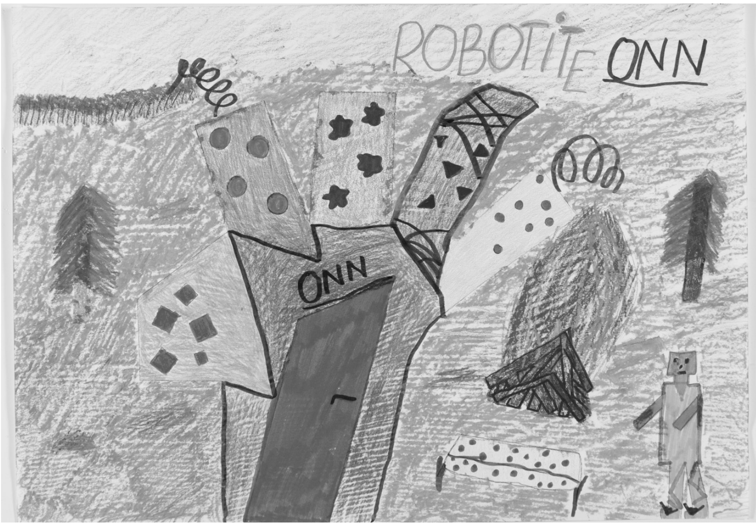

Figure II.4.1 Tree house drawings. Robot hut by Kristin Rüüt.

eventually lead to unexpected, larger outcomes that develop participant-museum relationships which cannot be achieved by professional management alone.

In this chapter, we treat museums as cultural institutions central to democratic society, with potential to advance cultural citizenship through participation and dialogue with museum audiences. We first discuss the theoretical premises of cultural citizenship, participation and engagement. Subsequently, we use various analytical typologies to examine a variety of empirical examples from our own as well as other researchers' experiences. We have limited the empirical examples of the chapter explicitly to audience-centred exhibition-making and museum development onsite. We then examine various communicative and participatory choices available to museums and the barriers to these processes from both the museum's and visitors' perspectives. Finally, the change from a public museum to a space of participatory relationships is discussed, and the benefits of altering these relationships are explored.

Museums as democratic institutions

Cultural citizenship and cultural representation

The museum is considered a public institution responsible for creating opportunities for democratic and participatory culture. Museums are perceived to be a part of a maximalist democratic framework (Carpentier, 2011), where democracy operates beyond traditional political institutions, extending to the cultural field. Giddens (1998) asks us to "democratise democracy" by listing the responsibilities of institutions like schools and museums to encourage democracy and participation.

Adopting a somewhat normative stance, we view cultural institutions as a core pillar of democratic society. We have previously discussed how the museum is located in the economic, cultural and political fields (Pruulmann-Vengerfeldt & Runnel, 2011; drawn from Bourdieu, 1984). The concepts of democracy and participation, which belong to the political field, permeate cultural institutions through the concepts of cultural and historical representation. Historically, the museum has been considered an authority on cultural representation, implying that the public's inclusion in performing this central function of providing expertise could threaten professional identities in this field (Tatsi, 2013). With the growing public interest in heritage in the 1990s, museums became part of the "industry" that packaged history, which (arguably) only served to distance people from their own heritage (Walsh, 1992). Today, the social roles of the museum, the question of being included in or excluded from the practices of cultural representation and cultural heritage, have become central. Nonetheless, to reject the view of the museum as authoritative institution is not easy, and some museums are slow to recognize the value of seeing audiences as active cultural participants.

Several studies have examined whether the notion of cultural citizenship helps to understand and deconstruct audiences' position in relation to contemporary museums (Dahlgren & Hermes, 2015) as well as recognize the value of participatory engagement. Cultural citizenship recognizes the relevance of activities of everyday life: citizenship is embedded in the structures of life and culture as "processes of bonding and community building, and reflection on that bonding" (Hermes, 2006, p. 303). Cultural citizenship is rooted in the notion of "civic cultures," that is, "cultural patterns in which identities of citizenship, and the foundations for civic agency, are embedded" (Dahlgren, 2009, p. 103). Of the different dimensions of cultural citizenship, identity is especially relevant for museums, as they can "nourish civic identities by the way they deal with people, with the democratic assumptions and modes that they embody in their communicative interaction" (Dahlgren & Hermes, 2015, p. 130). Thus, civic culture and cultural citizenship serve as starting points to explain how culture is a domain of wider civic practice in a democratic society, offering knowledge, meaning-making, identity, social interaction, and so on, "all of which serve to enhance the attributes needed for civic agency" (Dahlgren & Hermes, 2015, p. 130).

Museums are sites that can promote – or deflect – the advancement of citizenship (Bennet, 2005), as their many practices can support democracy from the bottom up. The democratic museum (that encourages citizenship) has to consider participation and engagement as modes of communication that help the museum support democracy.

Participation and engagement

Participation in the cultural sphere involves processes related to practices of cultural representation creating, consuming and belonging. There are two dominant approaches to interpreting cultural participation: the sociological view, which sees cultural participation as cultural consumption, and the political view, which treats cultural participation as cultural production (Lepik, 2013). The latter assumes that non-professionals have the right to produce culture and participate in decision-making processes at the cultural institution.

In museum practice, participation is an umbrella term applied in a variety of settings; it can be used simultaneously or exclusively for social activism, as a method of audience development or a tool of empowerment. Simon's (2010) typology of non-discriminatory participation can be used to distinguish between the levels of engagement of audiences. Simon (2010) proposed four models of participation: contributory, collaborative, co-creative and hosted. In the case of contributory participation, the visitors are solicited to be part of an institutionally controlled process, as opposed to the collaborative relationship in which people become active partners of institutions. In various co-creation settings, individuals, groups or communities work together throughout the process, jointly defining the project's goals, while museums adopting hosted participation release a gallery or programme to be controlled by the participants (Simon, 2010).

In the context of the museum, Carpentier (2011) distinguishes between access, interaction and participation: access is considered compulsory (i.e. entry to museums), while interactivity and participation are considered optional add-ons that can attract more individuals to museums. In the everyday language of museum work, the concept of participation is closely associated with the concepts of interaction and interactivity, "the processes of signification and interpretation triggered by the media" (Carpentier, 2011, p. 66). It therefore differs from the more encompassing and power-laden concept of participation.

For our purpose, the theoretical concepts of interactivity and participation are too narrow. Instead, we introduce the term engagement. Dahlgren (2006) describes the concept of engagement as subjective states, indicating a mobilized, focused attention on some object, "a prerequisite of participation" (Dahlgren, 2006, p. 24). Based on these theories, Lotina (2016) links museum and audience perspectives and defines engagement in the museum context as "a two-way process combining the performance of both the museum and the active audience by responding to the stimulus of engaged parties and initiating new actions with the aim to improve museum work, enhance the experience or make a difference on a larger scale in society" (Lotina, 2016, p. 35). Hence, the term engagement permits a whole repertoire of activities, which, depending on the type and nature of the museum, can attract and include different kinds of audiences.

New museology

The idea of museums as sites for participation and cultural citizenship can be viewed as part of the new museology, which itself has roots in the broader field of cultural studies. New museology "is interested in questions about the ways in which power is socially deployed" (Witcomb, 2012, p. 580).

Core analytical concepts, such as cultural citizenship, participation and engagement, are rooted in the theoretical and ideological frameworks of new museology and (post)-critical museology, framing the museum as a communicative and social institution, within the democratic social structure. In the framework of new museology, museums are located in the political field. The democratic museum is perceived as socially relevant: as an inclusive museum across all dimensions of museum practice, from education and exhibitions to collecting and documentation.

The concept of social inclusion popularized by Sandell and others (Sandell, 2000, 2002; Sandell, Dodd, & Garland-Thompson, 2010) foregrounds the interrelated ideas of access, representation and participation. Therefore, the focus is on the role and responsibility of museum professionals, including the shared responsibility of museums, museum workers and audiences/communities. The principles of the social inclusion approach are increasingly recognized and applied across the museum sector. Some strategy and development documents, for example, the Cultural Diversity Charter of International Council of Museums call on the museum sector "to promote empowering and enabling frameworks to active inputs from all stakeholders, community groups, cultural institutions, and official agencies through appropriate processes of consultation, negotiation and participation, ensuring the ownership of the processes as the defining element" (ICOM, 2010).

Therefore, the modes of engagement can be seen as ways to challenge and redefine the authoritative discourse of heritage. We argue that it is important to value the communicative museum for both the museum and audience. In the following discussion, we also suggest that the museum can be active, such that engagement need not always be a clearly identified political project, but where cultural citizenship can be supported by highlighting the seemingly mundane and ordinary.

The museum's perspective

Communicative and participatory choices for museums

At present, museums have to choose whether to endorse or disregard public engagement. To systematise these options, we adopt Tatsi's (2013) ideal-typical model that employs two axes to yield four types of museum (Figure II.4.2). Tatsi (2013), drawing from Simon (2010), suggests that museums and their different communicative approaches can be systematised using the social dimension of museum communication to understand *who* gets to speak in the public institutions of the museum (Tatsi, 2013, pp. 23, 26): at one end of the scale lies the monovocal museum, while at the other end lies the multivocal museum (Tatsi, 2013, p. 23). The second dimension identifies authoritative and collaborative museums to understand the basic power dynamics of truth and ownership in museums. Both axes have several degrees of intensity; therefore, in reality, there are many grey areas in the choices that can be made.

When the axes are combined (Tatsi, 2013, p. 50), four prototypes of museum emerge (Figure II.4.2) where potential engagement possibilities are modelled. Please note that no actual museums are ideal representations of any of the types proposed. Rather, this model provides a framework of understanding how to shift along the axes to select different possibilities of museum transformation. These four ideal types can exist simultaneously in a museum, implying different modes of engagement, although there can be a primary mode of engagement.

In order to prepare for the opening of the new ENM building with new permanent exhibitions, the museum's research department established an informal experimental unit called the Exhibition Lab, where different forms of audience participation, collaborative exhibition-making, design and technical solutions were developed and tested through temporary exhibitions. The Exhibition Lab was located in the museum's temporary exhibition spaces.

From our field experiences in the Exhibition Lab, the first open call for contributors to fill an exhibition space with their own exhibition can be considered *community curatorship*. As part of this pioneering step, a member of the community curated an exhibition of contemporary funeral and graveyard customs in Estonia based on her work as a funeral director. It adopted a monovocal perspective on the subject, excluding all other voices and cultural diversity present in funeral customs, focussing solely on one particular example (Tatsi, 2013; Pruulmann-Vengerfeldt, & Aljas, 2014). In a sense, this exhibition was more closed and monovocal than traditional professionally curated exhibitions. In this case, collaboration implied less insistence on the professional standards of balanced and inclusive storytelling. Hence, a single voice from the community,

Figure II.4.2 Communicative and participatory transformations of museum-embedded cultural experience (reproduced from Tatsi, 2013, p. 50).

selected through a public voting process, told her story. The museum became a little more open with respect to collaboration, but it was just one member of the community who had a voice.

Professional curatorship – wherein museum professionals decide on the stories to be told or excluded – can become more multivocal through community contributions. In one Exhibition Lab initiative, children's drawings of their favourite or most-disliked gift and short explanations of their choices were curated within an exhibition called "Shopping fever: Consumer culture in Estonia of the 1990s and 2000s" (Pruulmann-Vengerfeldt & Aljas, 2014; Järv & Runnel, 2012).

Contributory community engagement was realised through a non-discriminatory exhibition of all the drawings completed by 3225 children from 174 Estonian schools. The unexpected volume of the contributions meant that while the authoritative voice of the museum determined the original topic, it was strongly challenged by the limited space envisioned for the exhibition.

The subsequent exhibition, #ChillingAroundTown (Järv, Kallast, & Runnel, 2014), centred on growing up in cities, and therefore ways in which the younger generation creates its urban experiences through quotidian practices, that is, localised experiences of children up to young adults (Runnel, 2015b). This can be considered an example of *collaboration on an open work*. The process of mapping experiences and collecting the stories of children and young people was intended to be participatory, implying that the children and youth were given more control. They were involved during the exhibition production process through participatory activities and were allowed to have their own agenda and introduce new topics. Each stage of the exhibition production was modified according to the children and youth's everyday practices.

Similarly, decisions about subsequent stages of the research were not centred on the final exhibition objects; rather, the emphasis was on understanding emerging topics. Therefore, as the focus was on the participants, the exhibition modified its activities (e.g. urban games involving the building of tree houses) and conceptual ideas (e.g. the tree house as a theoretical representation) to ensure children and youth's collaboration in museum-making. Hence, shifts between different types of museum approaches can occur during the process. In this case, the ENM learned from designing different participatory activities through trial and error, beginning with a more authoritative approach to exhibition production leading up to a more collaborative approach. While these ideal types of museums can feel restrictive and normative, a practical solution may be Lotina's (2016) modes of engagement, which provide museums with a repertoire of communication solutions that could be oriented toward mono-/multivocal and authoritative/collaborative approaches.

Implementing modes of engagement

In this section, we discuss Lotina's (2016) modes of engagement, as it may help re-evaluate museum practices and methods for implementing different degrees of vocality and authority. We use Lotina's (2016) modes of engagement because they are based on empirical investigations of museum practice and reflect a variety of museum activities that engage with audiences, thereby overcoming the limits to the concept of (political) participation. Lotina (2016) proposed seven ideal-type modes of engagement: informing, marketing and advertising, consulting, collaborating and connecting with stakeholders, participants/audiences and professionals.

The most common museum-engagement mode is perhaps *informing*, which refers to educational activities and communication of factual knowledge (Lotina, 2016, p. 59). The ENM, which opened a new museum building and permanent exhibitions in autumn 2016, ran a special training course for more than 100 aspiring museum guides recruited from the general public. The course focused on the museum as cultural entity and involved a series of lectures by curators on sections of the permanent exhibitions and seminars on exhibition design conducted by exhibition designers and architects. Participants were examined primarily on their factual knowledge of exhibition content at the course end. The number of participants that are going to remain engaged as part-time guides is unknown, as several participants revealed that their main motivation for participation was improving their general knowledge of the museum and its future exhibitions. Both the course format and participants' expectations were rooted in rather traditional, monovocal museum practices, even though it aimed at building a community of potential museum guides.

Marketing and advertising refers to the promotion of any museum activity (Lotina, 2016, p. 59). The advertising agency that created the ENM's new brand identity (having a brand identity complies with the rules and demands of the economic field) proposed an idea based on participation. Consistency and flexibility in the brand's visuals was achieved by using a dynamic container logo, filled with a changing list of people's faces. The growing photograph database of faces to be used with the logo was obtained using a large travelling camera tent (Figure II.4.3) installed at public events in the summer, inviting the public to have their portraits taken to become part of the brand. Although initiated by the authoritative museum, this project contributed to the multivocality of the museum because the portraits inserted into the design were selected randomly for each occasion. The logo does not frame faces as a single message; rather, the faces become part of the larger message of the museum's identity ("we are the museum").

Consulting is a mode of engagement that actively raises issues, particularly those that are socially significant (Lotina, 2016, p. 60). The following example of consulting indicates how the museum's positions in the cultural and political fields intertwine when existing collections need interpretation. The ENM owns the largest Finno-Ugric ethnographic collections, obtained during the 20th century. During this period, collection practices and the ethics of display changed significantly. When the ENM began creating future permanent exhibition of Finno-Ugric ethnographic culture, previous museological standards (of the 1950s onwards) had to be re-evaluated following the search for new ways for heritage institutions to build and

Figure II.4.3 The travelling camera tent used by the Estonian National Museum. People were invited to have their portraits taken in order to become a part of the museum's visual identity. Photograph Arp Karm.

maintain relationships with Finno-Ugric peoples (Karm & Leete, 2015). In the 1990s, the same team produced an exhibition that included sensitive aspects of the Finno-Ugric worldview, which stretched cognitive-ethical limits for indigenous communities (Karm & Leete, 2015). The team learned that while ethnographers believed that they had had the ultimate scientific right to study and collect anything (cf. Sandahl, 2007, as cited in Karm & Leete, 2015), some objects were obtained in ethically questionable ways. When the Forest Nenets poet and reindeer herder Yuri Vella visited the ENM in late 2000 to study the collection's spirit figures from his home region, he contended that there was no way that anybody could have given these figures away in a culturally acceptable way. After discussing the conflicts between the traditional museological imperative of collecting and exhibiting culture and the indigenous understanding of spiritual logic, the curators decided to limit exhibiting indigenous sacred items (Karm & Leete, 2015, p. 110), demonstrating that a clear shift from an authoritative towards a collaborative position can also occur in a limited museum sector or in relation to a particular collection. While they acknowledged that the real owners of the museum objects are always the people themselves, other museum processes at the same institution were conceptually unaffected.

Collaborating involves inviting and enabling audiences to participate in social processes (Lotina, 2016, p. 60), thus making the museums more collaborative and multivocal. The challenge of collaboration can often be seen when working with indigenous communities. In the British Museum's Living and Dying gallery, the display of New Zealand's Māori culture was based on collaboration with Ngāti Rānana (the Māori London cultural group and diaspora). They collaborated on choice of objects and photos in the display and editing of texts to ensure the re-contextualisation of objects in the Māori framework. Museum-studies researcher Natasha Barrett proposed that the main agenda of representation was to choose objects that are more culturally appropriate to source communities, implying that they give audiences a fuller and richer experience. This approach, developed by the British museum based on common museum practices in New Zealand, also ensured that a variety of Māori perspectives were included in the exhibition (Barrett, 2016). Barrett considers these as the museum's "contact zones," which, according to Clifford (1997), highlight the ability of museums to act as spaces of cultural reciprocity.

Connecting with stakeholders (Lotina, 2016, p. 60) refers to building networks of related professional entities, sharing projects and offering mutual support. For example, museums in Nordic countries have longstanding subject-specialist networks of cooperation and many mutual interests, such as professional development and mutual learning, as well as joint exhibition or contemporary research and collecting projects, are supported through them. Networks such as Samdok (network for contemporary studies and collecting) in Sweden (1977–2011), or the Finnish museums network TAKO (which coordinates contemporary collecting and was initiated at a meeting of the Finnish National Museum in 2009), have been founded on the multivocality of the involved stakeholders.

Additionally, building stakeholder networks is very common in museum education, where teachers help develop educational material. Although the collaboration is likely to retain its authoritative voice, it still allows museums to strengthen themselves by using external expertise.

Collaboration with stakeholders can also be achieved in multiple stages. The Museum of London used a two-step engagement. The museum established the Youth Council, an engaged group of active teens aged 14–19, in the first stage of collaboration, where they create cultural activities related to the Museum's mandate of art and history and work with other organisations to realise various projects at the museum.

Lotina (2016, p. 61) described *connecting with participants/audiences* to include various activities sustaining the museum's relationship with its community. Community engagement has probably received the most attention in museological research, requiring political visibility, in general, debates about culture and identity, but more particularly, in relation to heritage and heritage management. While community engagement has recently received considerable attention in research on museums and indigenous communities, it has also been discussed in other fields. Many examples are interpreted through the lens of the politics of power, with museums positioned in authoritative, monovocal discourse. Watson (2016) noted that Norwich Castle Museum (Norwich is a city in England, United Kingdom) was a focal point in the city and a well-used venue. However, it was not considered relevant by locals as a museum and was described by visitors as having "little to offer" and being "poor on the inside." Watson concluded that "if we don't understand people's emotional responses to sites and objects we run the risk of making them difficult to understand at best, irrelevant to them at worst" (Watson, 2016).

This implies that while the museum engaged people in the economic field through entertainment, generating revenue, they failed at community engagement with respect to cultural field by maintaining an emotionally distant monovocal and authoritative heritage position.

According to Lotina (2016, p. 61), *connecting with professionals* refers to activities with persons who have professional knowledge in fields relevant to the museum. Contract work with different professionals may include recruiting and engaging university researchers, other museum experts and enterprises required through all stages of exhibit production, such as the new ENM permanent exhibitions. Presently, several museums have outsourced many of their activities. Because professionals are considered partners and negotiators, conflicts between artistic ideals and economic profitability emerge (see the chapter by Knudsen and Olesen in this volume). Often these clashes are related to exhibition design, website and app building, or the private agenda of professionals that also influences the development of not only the form, but also of the content of the museum. Although outside professionals are invited to collaborate, they still often exercise authoritative positions within museum structures. Lotina (2014, p. 101) cites an example from the Museum of Photography in Latvia where professional photographers were invited to participate in a competition evaluated by museum experts and external arts professionals – by which the museum relinquished control over its annual exhibition plan and allowed different voices to be present in the museum.

Barriers to participation in the museum organisation

Managing conflicting interdisciplinary demands is a challenge for museum workers. Even when the benefits of transforming museum practices are evident, several barriers need to be overcome. Metsmaa (2015) conducted ten interviews investigating different participatory initiatives across a diverse range of Estonian museums. Six categories of barriers were identified: fears, aims, design, resources, lack of understanding and lack of participants.

We observed that *fears* were usually regarding uncertainty in participatory activities. Museum workers tend to doubt the quality of participatory activities and believe that any kind of engagement implies additional responsibilities. Willingness to cooperate was sometimes considered a sign of an employee's weakness, which could indicate a lack of resources from the museum's perspective. However, museums in our sample also tended to avoid asking for feedback from stakeholders. These fears stem from a lack of shared experience – both positive and negative – and the lack of critical evaluation of participatory processes. Fear often stems from resistance to changes in established practices.

Another cluster of barriers stem from perceived external pressure to adopt participatory approaches, or when the *aims* of participation are questioned and reviewed. Several museum professionals considered participation a fad with unclear aims. Simon (2010) argues that participation has to be valuable to three parties: the organisation, participants and onlookers. Hence, all museum activities including participant engagement need to define the aims involved. Moreover, it is possible to broaden engagement repertoires without using collaborative approaches. For meaningful engagement, collaboration must be founded on mutual respect.

The *design* of participatory initiatives may be a barrier, especially in terms of efficient execution. Therefore, it is important to choose appropriate platforms, allocate resources efficiently, ask the right questions and adopt suitable approaches for initiatives. The importance of exhibits can also be a source of anxiety. The success of museum engagement depends on good activity conceptualisation and design. The *lack of understanding* about situation-specific strategies can be a major barrier. Difficulty with identifying suitable strategies is often related to insufficient experience and the need to plan activities in highly uncertain conditions.

This uncertainty and the lack of *resources* – finances, staff or time – are considered hindrances to participatory engagement. The lack of human resources is a bigger problem in museums with limited staff; they are often overburdened with different activities and challenges. The challenge of finding participatory activities then depends on having the right know-how and on being able to mobilise it in a timely and relevant manner.

The final cluster of barriers stems from the *lack of participants*. It is a challenge to understand the public's motivations for participating in museum activities. Does the museum trust them? Do they trust the museum to be a worthy partner when volunteering their contribution? What kind of resource do museum activities require: time, knowledge, finances? What can the participant get in return? The success or failure of museum-engagement activities often depends on how well these questions can be answered on behalf of the participant when participatory events are designed.

Thus, different modes of engagement are highly dependent on the type of organisation and available resources (time, money and people). Whether participatory activities can be chosen for museum engagement depends on the museum's policy and value system. Is, for instance, the democratic quality of the engagement valued and acknowledged or does the value system only recognise professional criteria? Diverse engagement repertoires generate challenges for the museum management. In order to encourage richer exhibition content and democratic exhibition design, museums require a network-leadership model. Organisational culture that supports decision-making and innovation across different museum-management levels allows museums to overcome some of these barriers.

The visitor's/public's perspective

From public to visitors to participants

Individuals involved in museum activities can be conceptualised in various ways by linking ideas from different perspectives. Runnel, Lepik and Pruulmann-Vengerfeldt (2014) proposed a shift from public to participants (Figure II.4.4): therefore, people can be classified according to their level of engagement and interest.

As indicated in Figure II.4.4, the more engagement expected by the museum, the smaller the size of a committed audience. Similarly, the number of participants significantly decreases when tasks become more complex and demand more time and resources. The sociological understanding of cultural participation treats the entire public as participants; however, a more nuanced distinction of levels of engagement helps the museum identify and understand their potential audience and event partners.

Individuals may also alter their participatory relationship with the museum, depending on museum-related or personal factors (e.g. knowledge, identities and resources). These

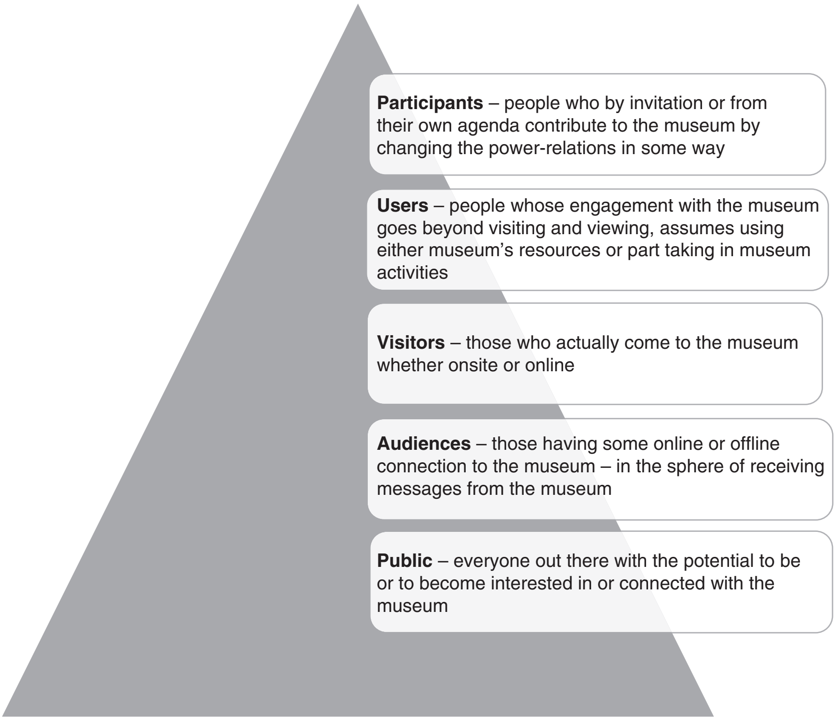

Figure II.4.4 Progression of people's involvement in-and-around museums from the passive public to participants (reproduced from Runnel, Lepik, & Pruulmann-Vengerfeldt, 2014, p. 222).

conditions are context dependent and can change with time, group-type and situation. From the museum's perspective, a conscientious participation design can shape participants' relationship to the museum. For example, a temporary, collaborative, museum-like installation in the urban square in Helsinki's Kallio neighbourhood, "Light is History" (2012) by Samir Bhowmik (Lightishistory.tumblr.com), involved community participation and new media approaches in the public display of artefacts operated by electricity. In addition to donating the artefacts to the "museum," 16 participating families volunteered to display their daily energy use on the project web portal. This data helped determine the brightness of individual therapy lamps and contributed to lighting the installation's artefact displays for over one week, offering wellness from light and energy to viewers and passersby. When using the framework in Figure II.4.4 to understand this initiative, it is clear that the participatory design initiative pushed individuals from the lower part of the pyramid to become participants. Samir Bhowmik's installation design turned the public into active participants, starting a conversation around issues of energy and the environment. In a sense, the 16 participating families from the neighbourhood represented the whole community by bridging private home spaces and the public, and the individual and the collective.

Why should people participate?

Russo and Peacock (2009) argued that the debate around peoples' motivations to participate in museum-engagement initiatives is complicated and not well understood. The cultural-political ideals of citizenship, participation and the remodelling of democracy are often not visible (or even intended to be visible) in the context of museum-participation initiatives. Aljas (2015) classified participants' accounts of their motivations as personal-individual, personal-social and personal-institutional. This classification is explored further in Table II.4.1 and is based on the analysis of ten unique museum-engagement activities at the ENM. None of the analysed initiatives discussed the wider cultural implications of the activities but focussed on potential personal gains. Consistent with Simon's (2010) and Lotina's (2016) arguments, Aljas (2015) purports that relevance to audiences is a crucial factor in designing and understanding appropriate museum-participation activities.

Aljas notes that in most cases, personal-individual or institutional motivations tend to be prioritised over the social dimension, suggesting that in the analysed ten participatory-engagement activities, the social dimension of museum participation was probably under-developed. This is common to several museums, according to Russo and Peacock (2009). One of the ENM's more elaborate participatory engagements was the "My favourite from the collections of the ENM" initiative, for which 35 participants made a total of 54 handicraft objects that were either copies of or inspired by items from ENM collections. Since the activity involved a competition aspect and time demands, the question of motivation is an interesting exploration. Handicraft specialists or hobbyists needed to work with the collections and therefore required prior knowledge of the institution, many of whom sought recognition from institutions as legitimate (re)producers of cultural heritage. Thus, in addition to personal-individual motivators of gain, fun, curiosity and challenge, institutional recognition is considered a reward in itself. This is consistent with Simon's (2010) observation regarding the visibility of participation, which can be a way for the environment to support the participant.

Aljas (2015) also considered the participatory environment as a motivator and identified six potential contributing factors: 1) participation is made easy and meets the participants' knowledge/literacy level, 2) participation as a side-effect, 3) presence of supportive and encouraging communication, 4) recognition and incorporation of participants' needs, 5) the impact of participation on collections or activities and 6) influence of previous experience with museums. These can work both in favour of and against the success of participatory activities. Aljas (2015) attempted to evaluate the relevance of these factors in relation to the activity's expected workload. The Museum of Broken Relationships – which began in 2006 as a temporary travelling exhibition of the material traces of people's failed romantic relationships and was established as permanent museum in Zagreb, Croatia – is a good example of how it relied on acknowledging

Table II.4.1 Summary of individual motivations to participate in the Estonian National Museum's engagement initiatives using Aljas' (2015) classifications.

Personal-individual	**Personal-social**	**Personal-institutional**
Personal interest	Expressing ideas and opinions	Documenting one's experiences
Curiosity	Dialoguing	Gaining institutional recognition
Relevance to one's own life experiences	Helping others	Achieving goals to receive rewards for participants
Seeking new knowledge and/or alternative perspectives for personal benefit	Developing solutions	
Challenging one's personal skills and knowledge	Gaining respect and visibility	
Seeking fun and enjoyment	Sharing a sense of belonging	

participants and addressing their need to talk about their experience of different devastating relationships. Moreover, participants' impact on the museum was permanent and relevant as the museum's collections comprised their personal contributions. Participation can be considered easy, as any object accompanied by an explanation of its emotional significance can be submitted to the museum. Further, the museum recommends that the stories be written in participants' first language to facilitate story-telling.

Summary

Undoubtedly, "expectations for civic and social engagement are profoundly changing museums' scope, reach, and relationships" (Johnson, Becker, Estrada, & Freeman, 2015, p. 18). Museums are usually held in high regard by the public; as a result, dialoguing with a "higher authority" can be difficult. However, its authoritative position allows museums to recognise, accept and acknowledge participation, and can hinder the recognition and support for collaborative processes both within museums and with their public audiences. Cultural-political ideals, cultural citizenship and the museum's relevance as a democratic institution are ongoing discussions in the museum world. These discussions must also include the benefits of going beyond one-way communication (Aljas, 2015). However, the museum itself must value different modes of engagement (Lotina, 2016). One way of overcoming barriers is to share experiences within museum networks and recognise the added value of a rich repertoire of museum engagement.

We also discussed how engagement modes vary in terms of the degree of authoritativeness and collaboration. Thus, visitors can be invited as users and producers as well as passive viewers. The fields in which museums operate offer different motives for selecting and realising engagement repertoires. A crucial aspect of engagement is the willingness to listen and recognise participants' voices. Collaborative and multivocal museums are founded on the belief that a diversity of voices is valuable, and they demonstrate a genuine interest in visitors'/producers'/participants' contributions, allowing their agendas to direct the museum to unexplored territories of mutual gain.

What happened to the tree house? How the story of youth in the city lives on

This tree house (Figure II.4.5a+b) was built as part of an exhibit on youth and urban cultures. Observations of visitor dynamics at the #ChillingAroundTown exhibition indicated changes in the ways young people and children related to the museum exhibition. Typically, a school group visiting a museum exhibition is an interaction between museum professionals, students and their teachers in a specific educational setting, where learning happens across different sites and contexts (Runnel, 2015b). This exhibition was produced in collaboration with children and youth; thus, it triggered young visitors to become active agents in the museum visit, shaping the situated dynamics of talks and interactions during the museum visit. As a result, they also shaped the visiting experience of adults by indicating and explaining exhibition objects related to their own prior lived experiences. Children actively created intercontextual links between different learning experiences (ibid.), and cultural citizenship operated implicitly. The retrospective analysis suggests that by varying engagement modes, shifting from an authoritative to collaborative approach and genuinely listening to participants, the museum encouraged urban youth to engage in museum-making, perhaps contributing to their active citizenship in general.

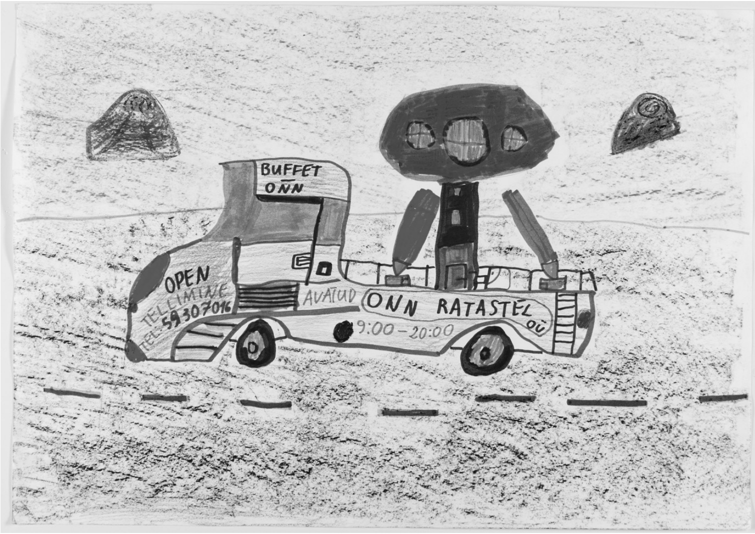

Figure II.4.5a Hut on wheels. Drawn by Artur Soo.

Figure II.4.5b The built car hut from the exhibition. Photograph Arp Karm.

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II.5

The museum as a charged space

The duality of digital museum communication

Bjarki Valtysson and Nanna Holdgaard

The development of digital media has given rise to high expectations of the transformative potential afforded by these media technologies, and it has become a truism that the Internet, but more recently also social media, have changed our social, political, economic and cultural life. These expectations have also permeated established cultural institutions such as museums, which have to react and adjust according to the digital agenda. In this agenda, *digital* has become a symbol of liberation and transformation that unleashes the authoritative museum institution.

The aim of this chapter is to discuss digital museum communication from the perspective of the museum as a *charged space*. Using two case examples, Rijksstudio and VanGoYourself, we will argue that in addition to the liberating potentials and promises, the digital museum space is also a charged space. The notion of charged space refers to the museum's historical, cultural and political significance as an institution that produces, maintains and represents our common identity, history and heritage. We will discuss the duality of digital museum communication and relate this discussion to how the museum's ability to charge its objects with certain values and meanings is used to promote political and commercial goals. We further argue that the structuring and facilitating of behaviour and actions are closely linked to dominant cultural policy discourses.

When conceiving of the museum as a charged space, it is important not only to look at its institutional structures narrowly, but rather its place within the larger field of cultural production. In order to account for the museum as a charged space and how it is affected by power, institutional positions and policy objectives, this chapter will make use of the French sociologist Pierre Bourdieu and his conceptualisations of the *field of cultural production*, *position-takings* and *space of possibles* (1993), as these prove to be particularly useful to identify and unfold the duality of digital museum communication in relation to power relationships and power struggles. According to Bourdieu, the field of cultural production is a system of structured relational positions. With the advent of digital media, the field of cultural production has been widened, not just in the intersections of the analogue and the digital, but as Bourdieu maintains, in other forces that form the field of cultural production. These include policy discourses, which encourage user-involvement and participation and the wider framework of cultural economics. This can be seen in strategies, visions and contracts where museums are meant to tailor their digital communications to reach out to new target groups in accordance with the governance techniques of new public management, experience economies and the creative industries

(McGuigan, 2004), and to invite users to actively engage and participate, embracing the new offerings of production, reception and consumption digital media have to offer (Bruns, 2008; Jenkins, Purushotma, Clinton, Weigel, & Robison, 2006).

The chapter begins by setting the stage for the dominant museum and digital media discourses, accounting for favourable and critical views concerning digital participatory cultures and how these have commonly referred to museum studies. We pay particular attention to how political visibility and cultural economics encourage user-involvement and participation. This is followed by a presentation of the two exemplary cases of digital re-use: Rijksmuseum (Rijksstudio) in Amsterdam[1] and the VanGoYourself project,[2] a Europeana Creative initiative. Both cases represent museum projects that marry commercial interests, political objectives and emancipatory potential of digital media technologies. The case presentations are followed by a discussion of the duality of digital museum communication in relation to digital engagement and participation introducing and using Bourdieu's concepts as point of reference.

Setting the stage: Getting visitors to create

Many of the popular discourses present digital media and museums as both a very recent combination as well as an odd and almost incompatible combination. Interestingly, though, it should be acknowledged that computer and information handling systems made an entry into museums already in the 1960s, in order to automate and share data within and between museum institutions (Jones-Garmil, 1997; Parry, 2007). As Ross Parry has argued:

> Museums have always been associated with technology. [. . .] Indeed, over the centuries, our museums, libraries, and archives have found their beginnings and shaped their changing roles at the same time as they also found new ways to present, process and protect their objects and ideas. Communication technology continues to inform and support the purpose and practice of the museum world, from the cabinet of curiosity to the illusory diorama, and from glass-fronted display case to the hands-on interactive, and from the punched card catalogue to the database management system. (2007, p. 137)

Concurrent with the computer's entrance into the museum, visions of disseminating technologies were also starting to be formulated. In 1968, Everett Ellin, director of the newly established Museum Computer Network (MCN), stated: "As the museum audience everywhere continues to grow, we are coming to recognise that the textual and visual data descriptive of our public collections of art and of scientific and historical material must be made more accessible and employed in far more imaginative ways than are possible by conventional means" (Ellin, 1968, p. 65). Ellin presented a vision of increased accessibility to the public brought about by computers. Interestingly, the vision of Ellin was very similar to the later expectations to the digitisation of cultural heritage, i.e. where the trajectory has been marked from providing access to digital materials to encouraging *active* user-involvement, participation and creative re-use.

A significant subset of literature addressing the implications of digital and social media on museums was inscribed within Henry Jenkins et al.'s widespread notion of "participatory culture" (Jenkins et al., 2006), which put emphasis on the transformation these media can bring about (Giaccardi, 2012; Sánchez Laws, 2015; Simon, 2010) and on Internet visions treating technological developments and digital media as emancipatory (Gauntlett, 2011; Lessig, 2008; Negroponte, 1995; Shirky, 2008). According to Henry Jenkins and his co-authors, participatory culture is related to amateur DIY-culture where the creation and the distribution, sharing and social interaction around the creation are crucial. Jenkins et al. emphasise that participatory culture is one that focuses on the collective and collaborative process instead of having a sole focus only on the individual expression. However, the authors stress: "Not every member must contribute, but all must believe they are free to contribute and that what they contribute will be appropriately valued" (Jenkins et al., 2006, p. 6). In this sense, participatory culture both allows and encourages participation, but it is not necessarily a culture where everyone participates.

Many of the Internet visions adopted in the museum literature focus on transformations in power relations where emphasis is given to the empowering potentials of citizens, thereby suggesting radical changes in the relationship between citizens and museums. This discourse is particularly noteworthy within the discourses of museum professionals manifested in conferences such as the Museums and the Web[3] and Sharing is caring[4], but also within academic literature.

The expected museum transformations resulting from the appropriation of new modes of digital museum communication are related to the museum institution itself, its relationship with the public and the museum objects, and are most often associated with visions of democracy, interactivity and participation. Digital and social media are considered to enable museums to reach out to audiences other than the traditional museum audience, such as young people and minority groups and communities, and to engage users in interactive and participatory ways, thus ideally breaking down the elitist and authoritative museum by creating a multi-vocal and egalitarian space that builds on new modes of communication. By inference, these initiatives attempted to win support for a more democratic approach to museum communication (Cairns, 2013; Runnel & Pruulmann-Vengerfeldt, 2014; Stuedahl, 2011).

The wider cultural implication of such emphasis on activation of citizens often implies a certain polarisation, such as *read-write* culture as opposed to *read-only* culture (Lessig, 2008) or "making and doing culture" as opposed to "sit back and be told culture" (Gauntlett, 2011). Lawrence Lessig emphasises the motivation factor behind such actions in terms of education and community kinship, whereas David Gauntlett points to factors such as the desire to share thoughts and creative doings so others can learn or be entertained, to be an active participant in various discussions, to be a media maker and not just consumer, to get feedback, to show off, to collaborate and contribute to and be a part of a community (Gauntlett, 2011).

However, the arguments for increased visitor participation and re-use of digital museum assets are not exclusively delimited to sustainability or democracy issues, but should also be considered within the economic realities, the implementation of new public management in the 1980s and the development of the creative industry as an economic growth instigator (Hartley, 2005; McPherson, 2006; Rectanus, 2002; Rottenberg, 2002; Skinner, Ekelund, & Jackson, 2009). This resulted in a need for museums to demonstrate effectiveness and impact where the importance of revenue was highlighted, turning museum visitors into consumers and transforming the museums' key function into recreation and leisure (Lin, 2006; Stephen, 2001). In this relation, the concept of the *experience economy* (Pine & Gilmore, 1999) is regularly mentioned, mainly in the Scandinavian cultural policy and museum studies literature (Bille, 2012; Skot-Hansen, 2008). Outside the fields of cultural policy and museum studies, experience economic impact is primarily found within tourism studies (Hayes & MacLeod, 2007; Richards, 2001; Sheng & Chen, 2012).

Finally, it is important to note that recently a growing body of literature has emerged which treats creative participatory cultures from a critical view, where the focus lies on Internet *prosumer* commodification, the fantasy of participation and free labour (Dean, 2005; Fuchs, 2010, 2014; Terranova, 2013). These perspectives will feature to provide a more nuanced discussion on the duality of digital museum communication and how these relate to the museum as a charged space.

Exemplary cases

The two cases discussed in this chapter represent different interests that museums are met with when engaging in digital communication. Both examples are open licensed at the same time as they encourage use of commercial social media, thereby serving as convenient cases to illustrate the duality of digital communications from the perspective of the museum as a charged space.

Case 1: The Rijksstudio: Make your own masterpiece

Rijksstudio is an online presentation of more than 200,000 objects and artworks from the Dutch Rijksmuseum's collection, where the public is invited to creatively interact and re-use the images in any possible way, make a personal collection within the online space, create stories and share the copyright-free images. Rijksstudio was funded by the BankGiro Lottery (the national cultural lottery of the Netherlands) and launched in 2012 as a prelude to the reopening of the physical Rijksmuseum. Taco Dibbits, Director of Collections, said: "The Rijksmuseum is a museum for and of everyone, and with the launch of Rijks Studio we are excited to share the extensive collection with art lovers around the world using the latest digital technology. We created Rijks Studio based on the belief that the collection of the Rijksmuseum belongs to us all. The collection inspires, we want to unleash the artist in everyone" (Artdaily.org, 2012).

In particular, the re-use of images has been central in the branding of Rijksstudio, and to illustrate this, the museum asked artists, designers and architects to select an object or artwork from the Rijksstudio collection and to create new artworks or products re-using the original object or artwork image. The first unveiled work was a tattoo inspired by a flower painting in the collection called "Still life with flowers" from the 17th Century. The Dutch fashion designer Alexander van Slobbe designed a dress and shawl, which were later sold at the de Bijenkorf department stores in major cities across the Netherlands. Other examples of re-using image objects from the Rijksmuseum collection in new designs include wallpaper, jewellery, make-up and iPhone covers.

The Rijksstudio is composed of four main functions. First, users are encouraged to save works of art in their own Rijksstudio. Here, they can choose to save the complete artwork or just a detail. Second, users can order and pay for a reproduction of a work of art or a detail of the work of art. This function allows users to cut specific sections of the artwork and choose what kind of product they wish for (poster, canvas, aluminium or gallery print) and to select a format (square, rectangle-portrait or rectangle-landscape). Third, users can make their own creations from an object or work of art. This way they can cut a specific part of an artwork, download the high-resolution image and "make your own masterpiece" (Rijksstudio, n.d.). In terms of inspiration for what users can do with their creations, the Rijksstudio proposes the following: "The image you just downloaded is supersharp. Sharp enough to turn a single detail into a shirt. Or a car. Or a phone case. Start creating your own masterpiece!" (Rijksstudio, n.d.). Furthermore, users are asked to inspire others by adding photos of their creations to the Rijksstudio community. Finally, the last function allows users to download an app and collect their favourites during their visit to the museum.

Case 2: VanGoYourself

Similarly, the VanGoYourself project takes advantage of established artworks in a digitised form where users are encouraged "to recreate classic scenes from some of the world's most famous paintings and then share with your friends" (VanGoYourself, n.d.). It includes more than 100 paintings from more than 34 different museums and galleries across 15 countries. The VanGoYourself project was initiated by the United Kingdom-based Culture24 and Plurio.net in Luxembourg – both nonprofit, independent cultural entrepreneurial organisations – as part of the Europeana Creative project and co-funded by the European Commission. The main aim behind VanGoYourself is to trigger an emotional response to an artwork, documenting it and sharing it with others. The functions of the site are further described with the following words: "First, channel your inner artist and pick a painting from the selection on the VanGoYourself website. Get together with your friends to recreate the famous scene, take a snap and upload it to VanGoYourself, which will twin your new master with the original artwork for you to share on social media, immortalising your artistic talent for all to see!" (VanGoYourself, n.d.). Since its launch in Spring 2014, VanGoYourself has received recognition within the museum and heritage sector and has won the award Best of the Web for best Digital Exhibition[5] at the Museums and the Web conference in 2015 and came in second place at the Best in Heritage conference 2016.[6]

Just as the case was with Rijksstudio, VanGoYourself has an "own me" component where users can print their digital recreation of established paintings on T-shirts, greeting cards and mugs. Both projects do therefore take their point of departure in offline settings of the museum as a charged space where the artworks are ascribed an authoritative meaning, and as digitised objects they are framed by certain interfaces to encourage active user participation and creative re-use. In both cases, these digital reproductions can then be reprinted as commodities which users can pay for, thereby shifting from online environments to offline again, re-contextualising the artworks from the museum to everyday products. Finally, apart from encouraging users to contribute to the communities that are created on Rijksstudio and VanGoYourself, further communication is encouraged on commercial social media platforms. The Rijksstudio highlights Facebook, Twitter and Pinterest, while VanGoYourself adds Tumblr to that mix.

Creative digital re-use

With regards to digitisation of cultural heritage objects in Europe, Europeana plays a significant role. Europeana.eu[7] was launched in November 2008 as Europe's digital library of cultural heritage and one of the flagships of the European Union's i2010 strategy for a European Information Society. Accessibility was one of the key goals, as President of the European Commission Barroso stated in the press release: "Europeans will now be able to access the incredible resources of our great collections quickly and easily in a single space" (European Commission, 2008). At its launch, the Europeana portal gave access to 4.5 million digital objects from more than 1,000 contributing organisations – libraries, museums, galleries, archives, etc. Today, Europeana includes more than 54 million digitised objects and has moved beyond the idea of Europeana as a portal to Europeana as a platform (Europeana Foundation, 2013). With the replacement of portal to platform, Europeana emphasises new forms of usage and partnerships beyond mere access to digital cultural heritage objects building on aspects from social media and remix culture, as well as business models from the creative industries. In this respect, Europeana underlines the concept of re-use: "Europeana is well-positioned to be this platform for cultural heritage, a cultural innovator that brings together people and businesses who want to view, use and re-use heritage, and people and organisations who have heritage to share" (Europeana Foundation, 2013, p. 11).

The importance of creative re-use of existing digital cultural heritage assets from Europeana was further highlighted with the introduction of Europeana Creative initiative, a subproject under the Europeana umbrella, which ran for 30 months from February 2013 and from which the VanGoYourself project originates. The main aim of Europeana Creative was to enable and promote greater re-use of digital cultural heritage resources by Europe's creative industries from Europeana: "The project set out to demonstrate that Europeana, the online portal providing access to more than 40 million digitised cultural heritage objects from Europe's libraries, museums, archives and audiovisual collections, can facilitate the creative re-use of digital cultural heritage content and associated metadata" (Europeana pro, n.d.b).

The idea of creative re-use is prominent in both the Rijksstudio and VanGoYourself projects, as in the Europeana context. Here it becomes obvious that re-use carries and covers different meanings, such as re-distribution, re-mix and re-enactment. In the case of Rijksstudio, the user is offered these options: 1) to re-distribute a Rijksmuseum artwork or object (or a detail), reproducing the artwork or object as a poster, print or on a canvas; or re-distribute artworks or objects in your own collection, creating new narrative or connections between the selected artworks or objects; 2) to re-mix a Rijksmuseum artwork or object by creating a new artefact, i.e. an iPhone cover. In this example, the user is able to utilise the artwork or object (either in its original form or modified) for a different purpose than the original. In the VanGoYourself project, the re-use is in the form of re-enactment of an artwork from the VanGoYourself collection, which then can be re-distributed through social media platforms.

When the interfaces of Rijksstudio and VanGoYourself are further examined, it becomes evident that they condition the participative potentials of users at the same time as they facilitate certain forms of communication. It is therefore useful to be attentive to what kind of *user-manoeuvrability* a given technology allows for, and more importantly, which context it grows from (Valtysson, 2014). The context in question is that of the museum as a charged space, which means that the objects that are being distributed and encouraged to be actively reproduced do carry different values than say an amateur home video of cats and dogs, because they are selected from authoritative cultural heritage institutions to serve ordinary people's creative, participatory purposes.

In both cases, these projects are framed by the premises of *read-write* culture (Lessig, 2008) and "making and doing" culture (Gauntlett, 2011), where the role of the *produsers* (Bruns, 2008) and *prosumers* (Toffler, 1980) is established on the basis of empowerment and emancipation. Indeed, according to this narrative, the common user is also a producer, which in the context of museums also indicates a shift in the roles of professional museum workers, such as curators, and the empowered user, who has now been equipped with tools to make his/her opinion known, and as demonstrated in the discussion of our cases, to actively re-use established artworks commonly known to be of such reach when perceived from the onsite museum space.

Another interesting feature of both cases is the idea that users are contributing to a community of enthusiasts, just like Lessig and Gauntlett accounted for. Bruns discusses this on the premises of productive users, or *produsers*, which refers to a type of user-led content creation that blurs the boundaries between passive consumption and active production. According to Bruns, the chain of production of content on digital media should be reconsidered due to the seeming absence of producers or consumers, as users act as producers and vice versa. Bruns therefore maintains that produsers are "engaged in the act of *produsage*" (2008, p. 23). Certainly, there is no doubt that such processes of creative re-use are quite evident. However, even though technology can in these cases be said to allow for user-manoeuvrability (Valtysson, 2014) that encourages such creations, the context in question needs to be considered, as well as the economic structure in which these projects are encapsulated. In other words, it is not enough only to look at the isolated projects, or for that matter, the isolated museums, but also as Bourdieu (1993) claims, at the networks they constitute and the networks they are constituted by in a broader field of offline and online cultural production.

Museums and networks of cultural production

Museums, like other cultural institutions, are not disconnected nodes in a network. On the contrary, they have affinities with other museums, cultural institutions, policy frameworks, regulation, industry, civil society organisations, etc. This is also true of Europeana/VanGoYourself and the Rijksmuseum/Rijksstudio. On a policy level, a project like Europeana is both of economic and political significance for the European Union, as it was one of the flagship projects of the EU's i2010 strategy for a European Information Society for growth and employment. This is still the case when a closer look is taken at the Digital Agenda for Europe, which is one of the seven flagships under the Europe 2020 strategy. This link to the Digital Agenda for Europe is directly established on the Europeana Creative site where this is stated: "The re-use of digital content is an essential part of the Digital Agenda for Europe. Several activities are stimulating the re-use of cultural heritage in order to demonstrate the social and economic value of cultural content" (Europeana Pro, n.d.a). Europeana therefore has different objectives, where political aims stand side-by-side with broader cultural and social aims that celebrate creative re-use of digital cultural assets as a tool to democratise the European cultural heritage by making it accessible and relevant to a wider audience. The tightly knitted relationship between economic growth and increased audienceships and democratisation and equality is exemplified in both cases of the Rijksstudio and VanGoYourself.

Rijksstudio combines digital accessibility to the museum collection, which at Rijksstudio's launch was inaccessible due to a largescale renovation of the physical museum, and value of sharing objects with sponsorship agreements, as well as direct sale of user-generated reproductions. These aims, which promote democratisation and "'sharing is caring" objectives, therefore come at a cost. As Drotner and Schrøder maintain, policymakers, industry and public stakeholders are involved in strategic alliances and partnerships, and these partnerships are often characterised by corporative economic gain, or as they put it, "[k]nowledge economies, rather than knowledge societies, are at the core of interest" (2010, p. 5). This is true of any museum, public or not, as sponsorship agreements and partnership with industry are increasingly important parts in ensuring funds (Rectanus, 2002), and the same goes for Europeana, which has clear affiliations with the economic aims of the digital agenda for Europe and the digital single market. However, this is not a recent development, and we will now turn to Bourdieu's theory of the field of cultural production (1993) in order to account for the power relations and dominant value positions with which museums are traditionally infiltrated, and how the two cases in question play on the duality of digital museum communication.

According to Bourdieu, artworks are constituted by their recognition as material and symbolic productions: "Given that works of art exist as symbolic objects only if they are known and recognised, that is, socially instituted as works of art and received by spectators capable of knowing and recognising them as such, the sociology of art and literature has to take as its object not only the material production but also the symbolic production of the work" (Bourdieu, 1993, p. 37). Bourdieu therefore recommends that we attend to the structural relations between overlapping dominant and dominated positions, thereby merging the conditions of cultural production and reception. The main argument is "relationality," which is put into effect in his concept of *field*.[8]

As a result, a field is not a static monolith; it is dynamic, as it constantly develops and transforms. In the field of cultural production, the work of art only gets ascribed certain capital if it is socially instituted as such and received by spectators as such. This "acceptance" is constituted in a complex network of senders, receivers, the material and symbolic production of the work and the value it is given by established voices and, of course, established spaces: "In short, it is a question of understanding works of art as a *manifestation* of the field as a whole, in which all the powers of the field, and all the determinisms inherent in its structure and functioning, are concentrated" (Bourdieu, 1993, p. 37).

In order to conceptualise the power struggle or negotiation of privileged positions, Bourdieu operates with two interdependent concepts that constitute a field: *space of positions* and *space of position-takings*. The latter, space of position-takings, is defined as "a structured set of the manifestations of the social agents involved in the field" (Bourdieu, 1993, p. 30). These manifestations include artistic works, political acts, pronouncements and polemics. The space of position-takings is inseparable from the space of positions, which is defined by "possession of a determinate quantity of specific capital (recognition), and, at the same time, by occupation of a determinate position in the structure of the distribution of this specific capital" (Bourdieu, 1993, p. 30). Position-taking is thus defined in relation to space of positions in which the actual and potential position-takings receive their values in a negative relationship with other position-takings and are therefore determined and delimited by the coexistence of other position-takings. It is not the content of the positions that defines and determines the position-takings, but rather on-going negotiations of boundaries between the different occupants of various positions. Therefore, changes in the field of cultural production can result from radical changes in the space of positions and can be caused by new demands from producers, recipients or the greater public, as Bourdieu maintains that position-takings automatically change "whenever there is change in the universe of options that are simultaneously offered for producers and consumers to choose from" (Bourdieu, 1993, p. 30).

This universe of options offered to producers and consumers is constantly expanding, and developments in information technologies and informational infrastructures have undoubtedly contributed to this expansion. This perspective is especially relevant to museums as it adds to the complexity of the field within which it is encapsulated and formed. As demonstrated by the cases of the Rijksstudio and VanGoYourself, the museum takes on a central position within this manifestation of the field of cultural production, as it is not only contained within the field of power but is one of the main institutional forces to constitute hierarchies of value-making, and in our case, what constitutes an "established artwork" worthy of creative re-use. Most importantly, in the context of the duality of digital museum communication, the museum is one of the most agile creators of the transformative axis that Bourdieu refers to as the *heteronomous principle of hierarchisation* and the *autonomous principle of hierarchisation*. According to Bourdieu, the heteronomous principle is "favourable to those who dominate the field economically and politically (e.g. 'bourgeois art')," whereas the autonomous principle is related to "art for art's sake" (Bourdieu, 1993, p. 40). The field of cultural production is at all times a site for power struggles between the two opposing principles of hierarchisation, an opposition between economic and cultural capital. This double hierarchy is one of the elements that contribute to the museum as a charged space as it constantly plays on different elements of heteronomy and autonomy. Indeed, the museum space, offline as well as online, is a space infiltrated by political and economic elements at the same time as it suspends the ordinary law prevailing in the field of power, generating processes of symbolic and cultural capital. The museum constitutes this duality, and also forms its movements, depending on the context in question. This is clearly demonstrated in autonomous works gaining their value from the charge that the museum inscribes into them and then transforming or moving this charge from the autonomous part of the axis to the heteronomous one, where digital reproductions of these works become subject to active re-use, and later on, take the role of commodities.

Online projects that encourage active user-engagement and creative re-use of artworks present significant challenges to museums. Indeed, in his account of this recoding of the museum, Parry discusses the *media museum*, which acquires the properties of a computer (digital files, user-driven functions and distributed network presence), making it difficult to detect the blurred boundaries between the museum and the computer (Parry, 2007). However, even if this is the case, we would argue that it is not the boundaries that are of importance, as policy objectives and aims for the creative industries have for some time now made all museums into media museums. The interesting part is how museums as charged spaces and as onsite constructions give value to digital museum communication, and how this is exploited by policy discourses on creative re-use and in bolstering creative industries' agendas.

While Parry talks about the blurring of boundaries, we would rather talk about the expansion of the networks, which museums have to relate to in an expanded field of cultural production. A crucial expansion factor is to be found in digital museum communication, which does not only manifest itself in isolated projects, but is also interlinked to larger networks that nowadays both constitute online communication within a narrower scope of the museum realm, such as homepages, apps, etc., and also museums' doings on commercial social media. It is quite clear from the two cases that much of the sharing is supposed to take place on social media. However, by advocating this, the museums do expand their field of cultural production, consumption and distribution, from their own sites to that of external platforms with their own statement of rights and responsibilities, data use policies and community standards. Digital content creation therefore also has a critical side, which requires us to scrutinise the intense data mining with commercial purposes, surveillance, privacy breaches and the category of produsage/prosumer commodity (Fuchs, 2010). Indeed, Fuchs maintains that the notion of participatory culture, when framed as an emancipative force, is not attentive to the corporative domination when it comes to the cultures of the Internet. In offering an alternative version of policies and emancipative discourses on creative re-use, Fuchs points to its exploitative nature: "Creativity is a force that enables Internet prosumer commodification, the commodification and exploitation of the users' activities and the data they generate. Creativity is not outside or alongside exploitation on Web 2.0; it is its very foundation" (Fuchs, 2014, p. 61).

While Fuchs carves out the force of creativity in a quite blunt manner, focussing on its exploitative side, he is far from alone in being attentive to this side of creative participatory cultures. The reason why we mention this in the context of Rijksstudio and VanGoYourself is that at the same time as open licensing is crucial for the projects to thrive, in both cases commercial social media are considered instrumental in reaching wider audiences; and this expands the network in which museums operate as central nodes in the field of cultural production. This expansion is largely due to external pressures from policy discourses and economic incentives (McGuigan, 2004; Rectanus, 2002), which now have been transformed to online experiences, user-engagement and creative re-use. The environments in which museums are situated therefore operate under increasingly competitive regimes, having to maximise visitor numbers and attract new user groups. As previously demonstrated, digital museum communication is considered ideal to do that, and therefore museums, in general terms, do not critically question their doings on commercial social media but rather see it as an ideal place to meet their potential visitors. This is again in stark contrast to the goals of the two projects that advocate for the use of open data, which, when distributed through the networks of commercial social media, become quite closed and commercialised.

However, as Bourdieu claims, position-takings change when there are changes in the universe of options offered to producers, consumers, produsers or prosumers. Online environments, commercial or not, have expanded the universe of options, and museums have to react. They can react by taking up the challenge of operating within digital environment, such as commercial social media; or in principle they can choose not to. However, to opt out is not really an option, as these environments are formed by policy objectives that increasingly favour quantifiable results. However, the duality of online museum communication allows for a more nuanced discussion, as museums as charged spaces are not just common *senders* in a communication conducted by loops of produsers and prosumers, but senders who add quality, authority and prestige to their message, online and onsite.

The duality of digital museum communication

The duality of digital museum communication is related to Bourdieu's axis of autonomous and heteronomous hierarchisation. The artworks that are chosen in Rijksstudio and VanGoYourself are established in a process where the museum as a charge space has assigned certain values to them. As Bourdieu points out, this is by no means a "natural" process only steered by some kind of sublime characteristics of artworks. Rather, the field of cultural production is a field of struggles and forces in which works of art only get ascribed certain capital if they are socially instituted as such and received by spectators as such. These artworks and objects have indeed been socially instituted from the viewpoint of the field as whole, in which the determinisms inherent in its structure and functioning are concentrated, and here the museum as an onsite charged space plays a pivotal role.

When established artworks and objects of this sort are digitised, they still keep much of this value, even if they have been re-contextualised from onsite museum settings to specifically tailored interfaces that allow for certain kinds of user-engagement. The digitised versions of these works are therefore still "charged," precisely because of the works' significance in its "analogue" onsite museum settings, which places them on the autonomous side of Bourdieu's axis. The duality of online museum communication lies in the constant movement between the autonomous and the heteronomous hierarchisation where, as digitised objects, they gain value because of their analogue, autonomous original. The museum, as an important node in the value-making of the field of cultural production, is instrumental in giving the "original" artworks this "autonomous" status. It is therefore not the creative re-use of the produsers and prosumers that give the end-products of Rijksstudio and VanGoYourself value, but the values that the museums have ascribed to them. The interesting part in terms of value-making is that even though, as Lessig and Gauntlett argue, there is value in the act of creation, the extra charge is still provided by the artwork, as being constituted as such. Undeniably, these are not creations that take their point of departure in cats and dogs of someone's arbitrary home. These are products that are charged with extra values because of the museums' ability to act as a charged space.

When the objects in the Rijksstudio and VanGoYourself have been digitised, they therefore stand as "charged digitised objects," which makes them valuable. Seen with the eyes of the emancipative side of participatory cultures, the value lies in the motivation to engage in creative re-use of charged digitised objects. This is the reason why they do manage to create vibrant online communities. When these creations are distributed via social media, they again get enmeshed in a different value system, which operates by the logics of data mining, data tracking, free digital labour and customised advertising.

However, in both cases discussed, there is a more direct economic model that is not to the same extent subject to concealed algorithms, namely the recreation of the digitised artworks as mugs, T-shirts, mobile phone covers and decorated cars. These creations are ignited by museums' position as a charged space and dressed up as processes of emancipative creative re-use, while simultaneously responding to political and economic goals. This link between the engaging produsers and prosumers, digital technologies and economic potentials is quite common in definitions on the creative industries, as John Hartley's celebrated version indicates: "The idea of the creative industries seeks to describe the conceptual and practical convergence of the creative arts (individual talent) with cultural industries (mass scale), in the context of new media technologies (ICTs) within a new knowledge economy, for the use of newly interactive citizen-consumers" (Hartley, 2005, p. 5).

The motivational value in creative re-use manifested in Rijksstudio and VanGoYourself is ignited by the items' charge as they originate from museums, where they have been formed by the autonomous axis of hierarchisation. These re-uses can have aesthetic value and certainly enrich the experiences of the produsers/prosumers that create them. However, when framed within the premises of creativity, active user-engagement and participation, as policy and creative industry discourses tend to, only half the story is told. Nevertheless, the other half is equally important, i.e. the half that takes on issues of data mining, privacy, exploitation of free labour and in the direct selling of mugs, shirts or in the act of decorating and exhibiting your car.

In both cases, the charge that museums ascribe to the artworks is used, or exploited, to play on the duality that lies in the axis of autonomous and heteronomous hierarchisation, from the artworks' value as onsite museum objects, to being digitised and manipulated under the logics of creative re-use, to being commoditised as analogue objects to be purchased. These projects, fun and innovative as they are, can therefore not only be seen with the eyes of the likes of Lessig, Gauntlett and Bruns, because they are encapsulated within the field of cultural production as a whole. This also entails that the museums as charged spaces are used (exploited) to encourage processes of creative re-use under open licensing, engaging produsers in the act of produsage. At the same time, these processes of creative re-use link to a larger network of commercial social media and the production of commodities, staging users not as produsers, but as prosumers. In these kinds of processes, the user is indeed not a user in Bruns' sense, but a consumer. Nevertheless, this fits perfectly with dominant policy objectives of cultural economics and creative industries where the newly interactive citizen-consumer generates free labour at the same time as he/she contributes to the new knowledge economy.

Notes

1 rijksmuseum.nl/en/rijksstudio
2 vangoyourself.com/
3 http://www.museumsandtheweb.com/
4 http://sharecare.nu/
5 http://mw2015.museumsandtheweb.com/best-of-the-web-winners/
6 http://www.thebestinheritage.com/news/the-best-in-heritage-2016
7 http://www.europeana.eu
8 According to Bourdieu, a field is defined as a network or system of structured relational positions; each field has its own set of rules, values and interests, which enable and limit how the different position occupiers act in accordance with whether they want to defend or improve their position in the field. Furthermore, each position's value attribution happens through its relation to other positions in the field (polar and hierarchical).

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