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Museum and Archive on the Move

Introduction

Landscape of Museum and Archive

The world-wide museum community is more than 55,000 institutions strong. The US has more than 17,000 alone, Japan 5,700, and Germany 6,300. It may seem that this infrastructure in all its diversity and history is such a mighty monolith that drastic change would be difficult to imagine. But the digital age enters with force and alters that status quo. It comes with new tools to present, collect, access (cultural artefacts), connect, explore, research, manage, and visualize data. It comes with its own digital-born arts and cultures, which have their own history of more than five decades. Digital arts and cultures play a role in 200 biennials around the world and in hundreds of specialized festivals, but do not significantly enter the walls of the museum world.

The museum setting in our contemporary world has diversified not only due to the digital revolution that has come to permeate global culture and interaction, but also due to many other non-digital transitions that have come about alongside or due to digital developments. Digital technology has introduced new multifarious ways of expression that change the nature of the object to be collected, as well and changing the expressive methods available for displaying and archiving collections. These new objects and the techniques used to preserve and interpret them embrace interactivity, make use of linear and non-linear structures equally, and encourage new methods and ever deepening degrees of participation.

The massive developments in digital-born media art and popular culture have been growing exponentially for decades now. Consequently, this requires that among the thousands of existing museums[1] for traditional art media, a significant percentage of new Museums and Archives dealing with the art and cultures of our time must be dedicated to fulfil their fundamental functions to collect, preserve, explore, mediate, and taxonomize digital culture.

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1   Rocco 2013.

Changing Needs

New directions in the contemporary landscape of the Museum and Archive and transformation in the digital world impacts the content and interactions of many disciplines on a global and local scale. Our world today has more interactions across disciplines, cultures and individuals than ever before, requiring renewed strategies for developing deliberately planned stages of engagement. This strategic participation attuned to the evolving nature of meaning making allows for more inclusive cross-pollination.

Many of the authors within the context of this book attest to and demand increasing collaborations within and between institutions. The museum and the archive become places to meet and communicate across disciplines, cultures, institutions and time-frames. The reader can glimpse a new space allowing for debate of ideas to support the development of new methods and outcomes. museum and archive are on the way to becoming a space addressing the needs for complex negotiations between cultural production, heritage protection, societal demands, and audience engagement. Strategic participation between actors within cultural and technological frameworks is necessary to facilitate the movement of the Museum and Archive forward in reflective and improved directions. This book includes examples of changing infrastructures that address new demands of the field and introduce challenging examples that currently cry out for equally-deliberated solutions and ways to address the evolving needs of the Museum and Archive in today's world. One commonality of the chapters within this book is the focus in each on the needs of our contemporary and our future society. Each author takes on the assumption that the transformation in how cultural heritage is created, documented, analysed and preserved has fundamentally changed the expectations for today's institutions as they prepare for the future. Archive and memory topology, and thus its necessary infrastructure, have inherently advanced and this book offers an overview and guidepost to the possible directions.

Historical Development

The birth of the museum in the 17th century created an instrument of enlightenment. The later foundation of the British Museum (1759), the Prado (1785) or most evidently the Louvre, opened as the first public museum (the Museum of the Republic) during the French Revolution in 1793, allowed free access for the first time to everyone into the former royal collections.[2] But, following Foucault's perception, the museum soon also became a method

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2   On the early German museum history: Savoy 2015. In 1814 the oldest museum in India, the Indian Museum in Kolkata was established.

to totalize, categorize and to control the world as well.[3] Napoleon's plan though, to erect eight panorama rotundas – 18th century's new mass medium – in the park of Versailles publicizing his victories remained unrealized, as did his concept of developing the museum into an agent of nationalistic passion. Both ideas were later more fully developed with profound influence throughout Europe and around the world. Even before the post-revolutionary Louvre, the British Museum contributed towards the establishment of identity politics with a national culture in an imperialistic context through the public presentation of collections of historic world cultures brought into the country from the colonies. Connected to this strategy and partially in opposition to it, the phenomena of enormous world fairs arose in the middle of the 18th century. This new kind of cultural event demonstrated on the one hand the current state of globalisation with its latest mostly European technology and industries, and on the other hand the richness of the resources of the subjected and colonised populations of the widely radiated, mostly European empires around the planet.

Fitting with its world monitoring and interpreting function, the museum developed alongside Carl von Linné and others ever more detailed taxonomies to classify the known natural world by species and hierarchies on the various elements of experience. A forerunner of the museum was the curiosity cabinet – *Wunderkammer* or *studiolo* – a private interior space, where the microcosm was interpreted by the owner and his or her guests through the naturalia or artificialia objects they possessed to re-create the macrocosm. Iconographic orders were kept secret and no classificatory system yet existed, further contributing to the symbol of this windowless space as surrounding completeness.[4]

Wunderkammer and *studiolo* (fig. 1) were the places of play, where the practice of *ars combinatoria* created something new each viewing by recombination, chance, or instant linkage and inspiration. Creative process and knowledge production essentially were driven by comparison and (inter-)active combination. Today, the active component, which was later restricted by the object-oriented museum, is re-entering the digital Museum and Archive. In the current setting of digital media and the enveloping windowless dark space, which functions again now as a precondition and enforcement for a digital *ars combinatoria*, digital artworks, object representations, and clusters of image worlds can now be partly experienced interactively, influenced by the audience and recombined.

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3   "Museums and libraries are heterotopias in which time never ceases to pile up and perch on its own summit, whereas in the seventeenth century, and up to the end of the seventeenth century still, museums and libraries were the expression of an individual choice. By contrast, the idea of accumulating everything, the idea of constituting a sort of general archive, the desire to contain all times, all ages, all forms, all tastes in one place, the idea of constituting a place of all times that is itself outside time and protected from its erosion, the project of thus organizing a kind of perpetual and indefinite accumulation of time in a place that will not move – well, in fact, all this belongs to our modernity. The museum and the library are heterotopias that are characteristic of Western culture in the nineteenth century." (Foucault 1998: 182).

4   Marstine 2008.
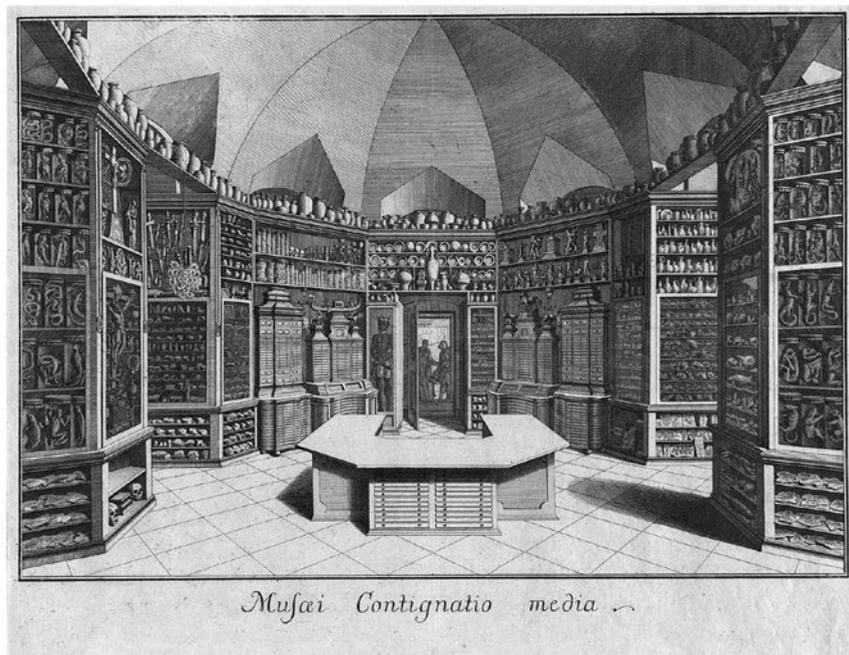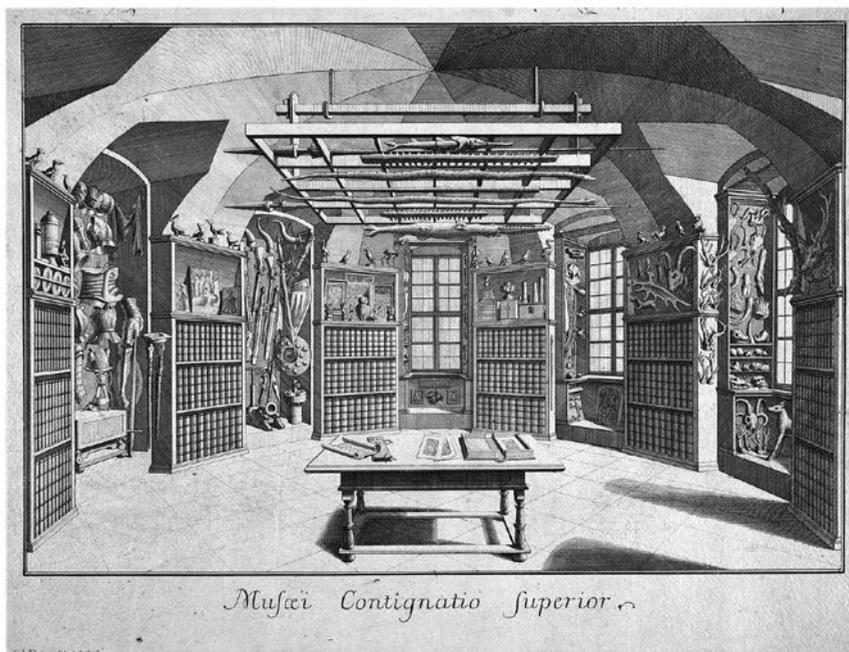
1   Göttweig Abbey, Graphic Print Collection and Wunderkammer. Etchings by Salomon Kleiner 1744: (above) Graphic Cabinet (below) Nature und Coin Cabinet.

Contemporary Development in the Museum and Archive

The relationship between the museum and archive relative to diverse collection content has become increasingly focused on meaning over the last decades; partly stemming from, but most definitely intensified by the digital revolution that brings new thinking models and opportunities. The value of museum and archive collections is negotiated by many actors and on many levels. This value-setting balances between cultural significance and potential for engagement at many levels. The level of educational, entertainment and memory engagement is one; while the relationship to modern debates and thinking is another. Some of the more forward thinking developments in the museum and archive as influenced by digital art and culture present a post-contemporary stage where subjectivity and objectivity are obliterated, where we enter the age of the post-digital, barely having paused to fully understand the digital revolution as it affects us today.

Ideas for a museum of contemporary objects are almost as old as the museum itself. Starting in the mid-18th century, natural science and masterpieces of technology began to be included in museums, eventually developing into the idea of the museum as experimental field, or a laboratory of the contemporary, becoming a space for artistic utopia. Partially reminiscent of the Wunderkammer principle, we might also understand the *Museé Imaginaire* by André Malraux as a prefiguration of the latest iteration towards the theoretically unlimited access of digital objects and cultural representations for creative (re)-combination.[5] Visitors co-interpret the available microcosm and form creatively – as formerly in the Wunderkammer – a digital macrocosm – a "virtual enlivening". Eventuating the circumstance that museums become not just stewards of objects, but stewards of digital data. It is now becoming clear that such an "enlivening" is transforming the archive too. The archive, historically the physical place where historical records are accumulated, preserved and often interpreted, faces a drastic transformation as well.

The future archive will connect the object or document with other archives, artefacts, information, people, and events. The archive will progressively absorb duties and features from other institutions and cultural entities, such as databases, installations, games, networks, knowledge tools, etc. On the other hand, many new instruments, such as computers, gaming systems, or cell phones already come with their own archival functions and amalgamate seamlessly with other archives. These technologies can be used by museums and archives as interfaces for engagement and empowerment. Ironically, the most extensive archive is run by the United States National Security Agency (NSA), collecting all personal data, phone calls, skype conversations, email, shopping lists of all citizens in basically all

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5 Although developed for the library, also the book positioning principle of "good neighbourhood" in the shelves of the Warburg Institute could be understood as tool for a scientific *ars combinatoria*, which goes along with Aby Warburg's *Mnemosyne*-image atlas of 1929, which remained a fragment. The Atlas tracks image citations of individual gestures and forms across media – and most significantly, independent from the level of art niveau or genre. One may say, that Warburg redefined art history as medial bridge building by including many forms of images – Warburg (1929) 2012.

countries of the world, except the Five Eye countries – information that became known in 2013 when Edward Snowden leaked that structure to the world.

In *Archive Everything*, Gabriella Giannachi traced the evolution of the archive into the apparatus through which we map everyday life. The archive, traditionally a body of documents or a site for the preservation of documents, metamorphosed over the centuries to encompass, often concurrently, a broad but interrelated number of practices not traditionally considered as archival. Archives now consist of not only documents and sites but also artworks, installations, museums, social media platforms, and mediated and mixed reality environments. Since document accumulation is still a power strategy, the fight now and in the future will be more and more about the control of the apparatus of the archive and the integration of the document providers and users in a collective process of documentation and collection of archival materials, based on clear democratic rules, integrating crowd sourcing. Many sources can help in writing histories, which are not linear or one-dimensional. As Gabriela Giannachi stated, the archive "is, now more than ever, our polis precisely because, increasingly so, it is where our citizenship in the world is recorded and re-written."[6]

The digital issues of culture brought about by the digital revolution are found in many manifestations in this book, ranging from digitally developed artworks that cannot exist outside the technology they are born into, to the fundamental societal changes that have altered our interaction with the world and its objects. We find ourselves in a landscape filled not only with a newly created digital heritage, but also non-digital cultural heritage that has now been digitized and made openly available. This requires not only building enriching experiences, but also sustaining significant digital projects. The aura of digital objects and the debates surrounding their authenticity or value are some of the most important elements of this book and the predictions of directions where the museum and archive are moving. The Google Cultural Institute is one of the larger examples exciting cultural institutions about the extremely high quality of digital reproductions, but also makes them wary of the potential privatization of digital data based on publicly held objects. On top of this, the technological engagement can even in turn be analysed by accessing visitor data.[7] There is no denying that today's cultural heritage is increasingly vulnerable and that intangible or endangered heritage demands new paradigms of thinking on the possibilities for preservation and increased sustainability. Technology allows for continually increasing participatory engagement. This can be found in museum and archive objects that are by nature interactive, but also that include interactivity

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6   Giannachi 2016: 184.
7   Bloomberg Connects, a section in the Arts Program of Bloomberg Philanthropies, financially supports "the development of state-of-the-art technology, from mobile applications to immersive galleries and other dynamic tools, designed to transform the visitor experience, encouraging interaction and exploration of cultural institutions on and offsite." Data on visitors' interaction and usage can then be gathered to inform marketing and interpretive developments – see the information on the website of Bloomberg Philanthropies: https://www.bloomberg.org/program/arts/bloomberg-connects/ (accessed March 15, 2017).

2   Ars Electronica Center – Deep Space 8K. Photo showing an impression of "Sun".

in their interpretive techniques. The ability to accommodate either linear and non-linear narratives or thinking is a particular strength of digital technology that accommodates new structures in the museum and archive landscape. Interactive digital engagement allows even for the audience to engage at a level of critical discussion. Thus, there is a demand for special conditions of the preservation of masterworks both of digital works as well as digitized works. The multifarious manifestations of cultural heritage in the digital age necessitate new methods for the museum and archive to insure inclusion, preservation and understanding (fig. 2).

Chapter Overview

In our complex global work in the museum and archive, the interest in interdisciplinary cooperation is growing. An exchange between the areas of art and science, creativity and technology is inspiring for a growing number of artists in media art and other artistic media, as well as for exhibitions and museums. Contemporary art is not only presented in combination with scientific approaches, but the dialogue between artists and science is also illuminated in a historic context. Thus, a new perspective on historic art is possible and

new visitor groups can be engendered. In 1959, an influential lecture by British scientist and novelist Charles Percy Snow characterized the divide between art and science as a source of societal problems.

A combination of art and science underlies the concept of a new Hermitage outpost in Barcelona that will be opened in 2019. Not only paintings, but also furniture and scientific tools and objects will be borrowed from the Hermitage collection to create a dialogue between art and science with contemporary scientific museology. Usually science and art as branches of knowledge are different in many aspects such as creation, teaching, training, dissemination, and research. There is often little to no overlap between science museums and art museums. In his chapter "Museum of Art and Science: A Language for the Great Fusion," **Jorge Wagensberg**, the founding director of CosmoCaixa, the Museum of Science of Barcelona, and head of the Hermitage Museum in Barcelona, explores the possibilities for a meeting space designed to bring together art and science. He emphasizes that the most creative areas of the human condition have always occurred in atmospheres characterized by a crossfire of scientific and artistic ideas. Wagensberg also refers to the special contribution such a center would make to the cultural life of a city.

Digital technologies can enhance an interdisciplinary exchange between art and science in museums and are also crucial for documentation and presentation. The online presence of museums has expanded in recent years, attracting new audiences. Many museums now embrace digital infrastructures and strategies, appointing "digital directors" (currently found in almost a third of major US art museums).[8] The Rijksmuseum developed an e-strategy in 2011 in preparation of the launch of its new website in October of 2012. An important section of the new web page is the so-called 'Rijksstudio' where the digital collection of the Rijksmuseum is presented with images that are free of copyright and displayed in high-resolution for providing a "digital aura."

In her contribution "The Digital Collection of the Rijksmuseum – Open Content and the Commercialisation of a National Museum," **Viola Rühse** provides a case study on the commercialization of large museums and their role in the tourism industry with a critical analysis of the main aspects of Rijksstudio. Ruehse considers general trends of Dutch cultural policy, culture tourism in Amsterdam, the special situation of the museum's long renovation from 2003–2013, and its need for a positive image and additional revenue (for instance from the museum shops). She points out that better public funding is essential for museums to fulfil appropriate educational goals.

Regarding the use of digital technologies in museums, it is necessary to take into account that the museum is a place of interaction even without new media. The visitor needs to move within the museum space to experience the collection. But the manifold movements and interactions between visitors and museum objects are often neglected in museum planning. **Dieter Bogner** addresses them in his chapter "Museum in Motion?" Bogner draws on his many years of experience as exhibition curator, international museum

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8   Droitcour and Smith 2016: 80.

planner and theorist. Museums seem to be static and unchangeable in the public eye, an impression created above all by "permanent" collections. Movement, in contrast, is less emphasized. Bogner highlights the importance of the phenomena of movement that defines the museum in terms of space and time. It represents a complex constellation of mental, psychological, intellectual, physical, logistical and technical movements. Clearly, a careful planning of museums is crucial for the movements of people, objects, and ideas.

Digital technologies such as tracking and mapping can be of use in the planning process. They have been applied not only in consumer and audience research, but also in media art since the mid-1990s. In addition to movements as a traditional form of interactivity (for instance between visitors and museums objects), there are now many interactive digital interfaces in museums and centers dedicated to science and technology. This is due to technological progress making interactive media commonplace, which also requires deep reflection.

To better understand the role interactivity plays within a museum context and how the museum expectations match those of the visitors, **Erkki Huhtamo** proposes in his chapter an approach called "Exhibition Anthropology." Its potential uses are examined through a series of case studies. Huhtamo considers that interactivity can turn into an automatism and treat the art museum as an institution that is permeated by rules and regulations that is not necessarily respected by all museum visitors. Indeed, many visitors use trial and error in order to understand the rules. Conversely, there are those who transgress the rules because of negligence, ignorance, or experimentation, making the museum a place where complex negotiations take place between the institution and its visitors.

The influence of digital technologies not only on museum environments, but also on art production cannot be overlooked. Contemporary artworks more and more frequently take the form of a visual or audiovisual event rather than a permanent, stable object. Today we increasingly encounter various forms of interactive media alongside film and video. As a result of the coexistence of these media, the temporal dimension of the artwork-event assumes one of two forms, a linear or a nonlinear form. The first type of artwork has found a home in the museum world thanks to the process of videofication, which the art world has been using since the mid-1990s. The second type has only just begun to make its way into museums. In his chapter "The Museum, Public Space and the Internet: Environments for Presenting Interactive Film", **Ryszard W. Kluszczyński** proposes a typology of interactive film and considers how the fates of these different varieties are tied to the institution of the museum, as well as what other environments could serve as a space for presenting it.

Oliver Grau's chapter "Digital Art's Complex Expression and Its Impact on Archives and Humanities. For a Concerted Museum-Network of Expertise and Preservation" underscores the fact that festivals rather than museums can be considered the most important media for the development of Digital Arts. Although digital artworks play a part at more than 200 biennials worldwide and over 100 additional festivals dedicated exclusively to this art form, few of these complex art and image forms appear in the permanent collections of the museums, archives and libraries.

Investigation shows that although Digital Art deals with thematic clusters of global relevance, including: climate change, genetic engineering, new extremes of surveillance, virtual financial economics and the image and media (r-)evolution, this art form of our time has not been introduced to our permanent collections so far and will be completely lost if there are no modifications in cultural collecting policy. This chapter shows how worldwide exhibited artists reflect the inherent complexity of global themes and create a political iconography of the information age.

Older definitions of the image, mostly developed for paintings, became problematic in the context of the digital age. Grau's chapter gives an overview of which new parameters can be used and further developed for complex digital imagery. For an integration and better comparison of digital art, the chapter introduces results of the AT.MAR project for a "living archive" web 2./3.0 and a bridging-thesaurus integration of digital arts also needed for a museum network of expertise and concerted preservation.

The "Asian Culture Complex" (ACC) in Gwangju in South Korea is a suitable example for the successful implementation of extensive strategic planning. The huge culture center was erected to develop the city of Gwangju as Asia's cultural hub and to enhance South Korea's cultural industry. With an area of 161,000 square meters, it is larger than Seoul Arts Center and thus the largest cultural complex in Korea. The center opened in 2015 and consists – among others – of an archive and research center, and exhibition hall and facilities for performances and other cultural events.

Youngjin Lee, initiator, planner and founding director of ACC, explains the beginning and further development of the project in his chapter "Asia as a Methodology. The Asian Culture Complex in Gwangju as an 'Arcades Project' for Asia." AAC's ultimate aim is to be a "cultural terminal open to both sides. The ACC comprises five institutions; together, they facilitate the discovery, collection, and exploration of the wealth of cultural heritage of Asia, share and develop knowledge, and provide raw materials for the development of new ideas, new works, and new value-added services. Although financial support at the national level is required, Lee believes that the ACC should be operated by the private sector on the basis of creativity and free exchange. In this respect, more debates are needed about the positioning of the ACC between commercial and public interests in order to become a collaborative and creative space for Asians.

Apart from the above mentioned challenges arising from digital technologies, and the diverse Asian culture area for the museum sector, the difficulties for contemporary art and artists from some other countries must also be taken into account. The Benin artist Meschac Gaba questions boundaries for contemporary African Art in the Western art establishment with his imaginary *"Museum of Contemporary African Art" (1997–2002).* **Okwui Enwezor** elucidates in his chapter that Meschac Gaba's imaginary museum critically reflects on discourses that have historically sought to undermine the possibility of African subjectivity in relation to archival or museological knowledge. Comparable to imaginary museums by other artists such as Thomas Hirschhorn and Khalil Rabah, Gaba addresses in his project the absence of objective structures provided by museums and other procedures that give works

of art visibility and meaning. Special attention is drawn to the consequences of the absence of an African archive for African systems of knowledge and the authorship of artworks. Enwezor places emphasis on the significance of museological and archival processes for Africa's relationship to modernity in the context of Gaba's project.

Wendy Coones takes the question of museums, borders, subjectivity, and modernity to another level in the chapter "Museum on Mars – Re-define, Re-territorialize, Re-auratize." She focuses on the urgent need to redefine the function and assumption for a post-modern, re-territorialized museum. The human fascination with and intellectual exploration of Mars is used a potential case study for this issue. Mars garners increasing attention in today's society, thus it is important to understand the degree to which being sceptical or smitten with a cultural object or phenomena can be analysed while simultaneously moving forward. Tracing the elements of history exemplified by notions held in the 18th–21st centuries of a habitable Mars, while considering present day developments towards interplanetary space-flight, will address the necessity for a suitable interdisciplinary, re-territorialized concept of global content and museum.

There are some overlaps, but also differences between the Museum and Archive and the challenges arising from digital technologies. The changing nature of objects, interpretation and information exchange made possible with digital technologies has transformed the structure and function of both the museum and the archive. New affinities and roles are coming to the fore in the 21st century that quicken movement in each.

In his chapter "Aesthetics and Anaesthetics: Eudaimonism and Melancholia in the Archive", **Sean Cubitt** questions the vulnerability of media archives and henceforth our obligation to safeguard them. He analyzes the values of media archives today, and what the structure of these values can tell us about the nature of ethical and political obligation in the 21st century. Beginning with eudaimonism, Aristotle's ethical principle of the pursuit of the good life, Cubitt claims a special privilege for aesthetics in political life, but confesses a certain impossibility in living up to the claims of the past, only to discover in that distressing failure a model for an aesthetic politics inspired precisely by the inevitable inadequacy of the confrontation with the archive object.

Christiane Paul draws attention to the challenges that digital media art poses to archives, museums and the art market in terms of presentation, collection, and preservation in the chapter "From Archives to Collections: Digital Art In/Out of Institutions". Moreover, she points out that digital art in all of its forms is still far from integrated into the art world, and both its 50 plus year history and its aesthetics are not as thoroughly understood as that of media such as painting or video. When it comes to an in-depth analysis of the complexities of this relationship, significant groundwork remains to be done. Key factors in this endeavour are investigations of art-historical developments relating to technological and participatory art forms and their exhibition histories.

Morten Søndergaard's chapter "Textualities, Materialities and Indeterminate Pasts: The Archive as Hybrid Infrastructure" takes its departure from some of the many problems, or key-instabilities associated with registering and maintaining media art with specific

reference to the archive situation at the Museum of Contemporary Art in Roskilde. Sønder-gaard points out that the media may become obsolete before the media art piece enters an archive. He makes clear that the real issues of archiving objects and art made with digital technology originate in the institutional infrastructures and classification-systems framing and structuring the archive itself.

Jeffrey Shaw and **Sarah Kenderdine** examine strategies for encoding, retrieving and re-enacting intangible heritage in their contribution "Archives in Motion: Motion as Mean-ing." They describe and develop ways that allow these archives to be 'alive' and emerge as part of a contemporary reciprocity between expert and novice, performer and agent. Intangible cultural heritage is gradually being acknowledged as the essence of societal well-ness and strategies for safeguarding cultural practices and embodied knowledge systems have become acute issues for preservation. It encapsulates social practices, oral traditions and performances as cultural expressions that are defined by their reliance on tacit and embodied knowledge practices. In contrast to the tangible heritage manifest as objects in museums and as monuments, intangible cultural expressions are enacted, socially trans-mitted and inextricably linked to people. Shaw and Kenderdine explore in particular Hakka Kung Fu, Chinese Confucian rites and the oeuvre of a Singaporean poet, and offer succinct case studies exploring different approaches for engaging living traditions, re-enactments and poetic performance as 'archives in motion'. Digital motion capture datasets are dis-cussed in terms of their potential performance as a mediated version of the bodily rep-ertoire and as resources for aesthetic re-enactment. The qualities of such forms of digital re-visioning are positioned as a practice that encourages cultural sustainability.

With **Andreas Broeckmann**'s chapter on the exhibition "Le Immatériaux", an example for a pre-digital interdisciplinary project combining art, science and technology, is included in this edited volume. The exhibition "Les Immatériaux" which took place at the Centre Pompidou in Paris in 1985 is one of the prime reference examples for the conjunction of artistic, philosophical and scientific discourses in the 20th century. The main curator of "Les Immatériaux" was philosopher Jean-François Lyotard, and much of the scholarship on the exhibition has focused on the ways in which the show articulated Lyotard's concept of "immateriality" and, more broadly, his conception of postmodernity. Broeckmann focuses on the fact that "Les Immatériaux" was also a research platform that extended over several years, since the project for the exhibition had already been in the making at the Centre Pom-pidou's "CCI" (Centre de Création Industrielle) since 1981, two years before Lyotard joined as a chief commissioner in 1983. In the course of its preparation, an extended consortium of science, research and development agencies had been constituted to arrive at a survey of the latest trends and innovations in techniques and materials of industrial creation.

Harald Kraemer focuses upon the digital age and its hypermedia applications in the museum and archive. He addresses the problem that later generations of researchers, designer and students will have limited access to the masterpieces of interactive design and therefore the digital cultural heritage of the last 25 years. He proposes that it is only a mat-ter of time before the advances in the next generation of computers, the aging of storage

media and data formats, the demagnetization and dematerialization of the data, missing strategies in long-term archiving of the Museum and Archive will render the digital data of this pioneering age unusable. In his essay, the author, a renown pioneer of Digital Cultural Heritage, analyses some of the reasons for the failure to explain why institutions have not taken more care in the sustainability of design and production of hypermedia applications and in the strategic participation in the evolution of information and communication technology. Kraemer asserts that instead of the recent reactive practice of archiving digital data, proactive strategies are vitally important for the survival of our digital and digitalized heritage.

Digitization also offers new possibilities for the study of cultural heritage with computational "big data" methods. Today, as over two billion people create global "digital culture" by sharing their photos, video, links, writing posts, comments, ratings, etc., it is possible to use the same technology to study this universe of contemporary digital culture. In his chapter "Cultural Data", **Lev Manovich** introduces a number of issues regarding the "shape" of the digital visual collections we have from the point of view of researchers who use computational methods. Manovich emphasizes that the data universe provides some new opportunities for research, but it also sets new limits.

Lutz Engelke and **Anja Osswald**'s final chapter deals with the effects of digitization for libraries in "'Weltregal' or the World on a Shelf – a Utopia for 21st Century Libraries". Digitalization has resulted in libraries losing their previous monopoly as archives of information and books. The Internet not only has incomparable storage facilities, but can also provide that knowledge to users without spatial and temporal limits. Some progressive libraries therefore develop into cultural community hubs, as spaces for digital era interaction, computers, information islands and 3D printers become as important for libraries as books.

The chapters in this book serve witness to the current demand and ever-increasing need for integrating interactivity and interdisciplinary methods in the practice of museum and archive work. This also translates into a form of intercultural exchange that builds bridges across political, cultural as well as artistic practice. The digital age not only enables new types of exchange with cultural objects, but also creates the condition for a transformation into a fundamentally new and enriched form of object. At the implementation level, this manifests in inter-institutional cooperation and integrates multiple chronologies as well as interpretative directions. Collaborations within and between institutions allow for a crossfire of ideas to develop and become opportunities to meet and communicate and thus help with the complex negotiations of meaning making necessary for the future of the Museum and Archive in our society.

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