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Museums and Digital Culture

New Perspectives and Research

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Enquire Within by Jill Lauriston (2017), a mixed media work exhibited at the Weston Library, Bodleian Library, Oxford, "From King Alfred to Chaucer: First graphic designers of English texts". (© Jill Lauriston)

Foreword

Understanding digital culture is critical to the success of a museum professional in the 21st century. The digitization of the world has created a paradigm shift for museums: It is challenging our models of thinking and working. If museums are to retain their relevance, we will need to adapt museum strategies, planning processes, workflows, practices and programs to align with the expectations and behaviors of our digitally enabled audiences.

For our audiences, a digital experience is not inferior, less authentic or a substitute to a physical experience. It is simply a different experience. It is the responsibility of museum professionals to study, analyze, test that difference and determine how best to leverage the opportunities it provides to more impactfully fulfill our institutions' goals. Whether those goals are to scale the museum's mission globally or design a more multisensory exhibition experience or develop a networked collection management practice, there is no one size fits all. Our success in guiding our institutions through the transformative and complex impacts of digitization requires that we continue to cultivate what is unique about our institutions: their collections, audiences, remits and identities. To achieve this, we need to be thinking about digitization on several different levels, and through a depth of different perspectives: This is what this book does.

By exploring digital culture and museums through nine different lenses, this book provides the reader with a foundational framework around which to develop our understanding of digital culture. It looks at the topic from the perspective of educators, curators, artists and audiences, through the lens of history and the future, and from operational and creative perspectives. In so doing, ideas are introduced, explored, re-explored and developed throughout the book, enabling the reader to build a richer understanding of the key issues at hand.

By virtue of living in the 21st century, we are all students of digitization. The next generation of technologies that are reaching mass-markets—artificial intelligence, augmented realities, virtual realities and machine vision—will only accelerate the rate of digitization of our world. Now is the time to ensure we have the tools necessary to make sense of that future.

New York, USA   Loïc Tallon
2019   Chief Digital Officer
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Preface

This richly illustrated book offers new perspectives and research on how digital culture is transforming museums in the 21st century, as they strive to keep pace with emerging technologies driving cultural and social change, played out not only in today's pervasive networked environment of the Internet and Web, but in everyday life, from home to work and on city streets. In a world where digital culture has redefined human information behavior as life in code and digits, increasingly it dominates human activity and communication. These developments have radically changed the expectations of the museum visitor, real and virtual, the work of museum professionals and, most prominently, the nature of museum exhibitions, while digital art and life in a digitally saturated world is changing our ways of seeing, doing, our senses and aesthetics.

Overall, this book creates a new picture of the 21st-century museum field. As museums become shared spaces with their communities, local, national and global and move from collection-centered to user-/visitor-centered institutions, they are assuming new roles and responsibilities tied to new goals for engaging their audience, conveying meaning through collections, creating learning experiences and importantly, connecting to daily digital life and culture integral to the museum ecosystem. Our studies of recent exhibitions at museums leading change are used to exemplify new directions, while they point to a reimagined vision for museums of the future at the heart of which is the integration of digital culture and visitor experience and participation in real and virtual space.

This volume builds upon the work of the editors, Giannini and Bowen, including co-authored articles published over the past few years, lectures and research-based teaching related to museums and digital culture. Considered holistically, these research forays into museum life and exhibitions shed new light on museums during a period of digital transformation in the context of emerging technologies and dramatic social change both local and global. Increasingly, museums are reaching beyond their walls to engage with their communities and audiences, onsite and online. Through conversations mediated by Web sites, social media and online collections, museums are listening to public voices fostering greater diversity and

inclusion. Using this as a starting point, the editors have organized the discussion broadly, while contributors speak from their own experiences and expertise that taken together creates a new view of the field. Recent exhibitions at museums that are leading change are used to exemplify new directions and new vision for museums of the future.

Having surveyed recent books on museums, this book is distinguished by its focus on how museums are interacting with their external environment and the people they serve, set in a digital moment of rapid social and cultural change. We look at how museums are transforming from their 19th century past to reinvent their identity, and the look and feel of museum galleries, seeking new ways of conveying meaningful narratives and messages. So, while other books are considering museums from the inside—administration, management, process and collections— our book considers museums from the vantage point of inside/outside interaction, participation and collaboration. This porous, flexible model enables new ideas and change—breaking out of the established silos of past practice.

We feature case studies through the lens of digital artists, exhibitions, gallery design and architecture, both physical and virtual. The book aims to create a body of new evidence that inspires the reader to consider the new evolving museum landscape and its diverse communities. We show how the digital ecosystem, to which we are all connected and which is spawning the Internet of Things, has laid the foundations of the postdigital world we are now entering, in which physical and digital aspects are integrated seamlessly.

In Part I of the book, we introduce the digital culture background of the book beginning in the 1940s, with the work of Alan Turing, inventor of computer science, and Claude Shannon, inventor of information theory and digital communication, a moment in time which marked the dawn of the digital revolution, one that links to the popular cultural revolution of the 1960s to 1980s. These breakthroughs set the stage for the introduction and development of the Internet, and the defining moment in 1989 when Tim Berners-Lee brought us the World Wide Web. Acting as a catalyst for growing participation online, the Web turned the digital tide toward visual interface, smartphones and personal digital devices that sparked the rapid rise of digital culture. Through observations over time, we document how these developments have touched every aspect of human life. As the space between digital and physical, real and virtual blurs, recasting art, cultural, social life and human behavior into new digital forms, places and spaces, digital life and culture are merging and redefining the way we live, while more and more we think and see digitally. From a foundational view, we look at how museums living in a digital culture are changing and adopting to the digital behavior of visitors who enter the museum with smartphones in hand, looking at a small screen, as the focus of life and their lens on the world. From observations in museums and online, we discuss how museum/audience interaction is altering the expectations of visitors and their sense of what the museum experience should be. At the same time, we explore how digital art shifts our ways of seeing, our senses and aesthetics to the digital realm, while the ubiquitous presence of digital is blurring the lines between pop art and

high art, real and virtual, as we enter a postdigital world merging physical and digital reality.

Part II considers philosophical and theoretical aspects of how technology is affecting the artist's sense of being and experience, questioning what in art changes and what is lasting, whether we see through our sense of poetry and nature, or through the lens of a camera that can distance the artist from the thinking and feeling about art. From the vantage point of the 19th and 20th centuries, we look at the question of how technology might change the artist's sensibilities, juxtaposing the theories of art from Hegel, Goethe, Barfield and McLuhan, and moving from past to present, to observe the nature of digital change.

Part III covers digital aspects of art and museum-related temporary exhibitions. We present evidence drawn from experience and data gathered, as well as the literature—books and articles—over the past few years. Exhibitions, considered the centerpiece of the life of the museum, are increasingly tied to the museum's digital life where most of museum work and activities are carried out and where art and information come together to convey content, meaning and narrative. We present a survey of exhibitions over the past few years by leading museums in New York and London to show new trends, innovative use of digital media technology, and an increasing presence of digital, installation and mixed media art. We juxtapose digital works exhibited inside and outside the museum and explore how the use of digital displays across most sectors of society is influencing how the public views art which in turn questions its very nature and meaning.

In Part IV, we consider some digital aspects of museum collections, which may themselves now be digital in nature. An important current issue is how permanent exhibitions in museums are being updated to meet audience expectations. To accomplish these goals, museums are developing a digital strategy applied across the entire museum. Generally, museums in 19th- and early 20th-century buildings are being challenged to find innovative ways to re-conceptualize their galleries and public space for the 21st century.

Part V presents issues with museum audiences and visitors in a digital and virtual context. Real and digital interaction and participation are all important aspects to be considered by museums. Visitors/users empowered by digital technology, especially smartphones, have new expectations for engagement. There is a need for museums to convey meaning, engage visitors and reflect social consciousness and awareness. Museums of any size must have programs for outreach, diversity, inclusion and community interaction. Digital states of being and identity are changing visitor behavior and recasting museums' identity to aid visitors in new ways of thinking about the world, as well as their evolving social and cultural consciousness. As museums build relationships through social media, they can find themselves more vulnerable to audience opinion and its relationship to art on display.

Part VI presents the ideas and work of several digital artists, mostly in the form of interviews with selected digital artists. Digital aesthetics and senses, installation, mixed media, interactive and participatory art, virtual reality, augmented reality, robots and robotics, and the presence of digital artists on the Web, in their own voices, all impact on museums, and especially on art galleries. Increasingly, people are seeing digital as the world they inhabit is saturated with digital media. This immersion in digital media is affecting the human sense of color, light, space and time.

In Part VII, educational aspects are considered. For example, Tula Giannini designed and introduced to Pratt School of Information three museum-related programs, the first of their kind: fall 2015, a new museum master's program, Master of Science in Museums & Digital Culture, that newly defines the knowledge and skill sets for 21st-century museum professionals through its cutting-edge curriculum; fall 2016, a new Advanced Certificate in Digital Curation and Preservation; fall 2016, a dual-master's degree, MS Library & Information Science and MFA Digital Arts, and an Advanced Certificate in Museum Libraries. We address the need to diversify the museum profession, but not only in terms of staff, but equally the knowledge and skills that students acquire, moving from a laser focus on curatorial skills and art history, to an amalgamation of content, curation and communication in the context of the digital ecosystem of 21st-century culture moving to an education that is relevant and speaks to contemporary narratives and values.

Part VIII presents some issues for museum libraries and archives. Among the world's finest libraries are those housed in museums and universities. Examples include the Frick Art Reference Library, part of the Frick Museum, and the Bodleian Library at Oxford University, as covered in this part. Such libraries including special and archival collections, rare books and ephemera constitute a treasure trove of materials on art, design and architecture, and importantly, their collections in general have been developed around subject areas of the museum's object collections. Further, such libraries have conservation laboratories, provide public access and services and support scholarly research on topics relevant to the collections.

Part IX of the book covers aspects of the future of museums with respect to developments in digital culture. We consider the growing forces competing with museums for audience including entertainment, and the many hours people spend each day with digital media. Museums have long identified with their physical space as a specific place in time and space, have now expanded to cyberspace and have a digital identity on the Web. Developments such as smart cities will further affect how museums fit into the digital culture overall.

In summary, we have entered the next wave of the digital revolution as all media has gone digital, a state of being that closely aligns with human creativity and innovation—mainly, art, culture and the humanities, the lifeblood of the museum. The convergence of media as digital, which makes all media equally usable, is fueling the rise of human expression through visual and sound media, as we shift to a post-text-dominated era to life on the Internet, while new technology is introduced

regularly such as visual recognition using AI. This trend reveals the power of visual and sound media as digital media language that enables museums to reach larger more diverse audiences. We hope that readers will enjoy this selection of viewpoints on the relationship of museums and the rapidly evolving digital culture in which they find themselves.

New York, USA   Tula Giannini
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Acknowledgements

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About the Editors

Tula Giannini Ph.D., MLS, MM is tenured full Professor in the School of Information at the Pratt Institute, New York, USA, serving as Dean of the School from 2014 to 2017. At Pratt, she has initiated and managed several collaborative digitization projects with leading New York City museums and libraries, supported by the Institute of Museum and Library Services (IMLS), and in 2015 obtained a Master of Science (MS) in museums and digital culture. Since 2016, she has co-organized the EVA London Symposium, associated with the annual EVA London Conference on Electronic Visualisation & the Arts. An interdisciplinary scholar also working in musicology, she served as Curator of Musical Instruments at the Library of Congress. Her publications include 25 entries to The New Grove Dictionary of Music and Musicians, Oxford University Press and the book, *Great Flute Makers of France: the Lot and Godfroy Families*, published by Tony Bingham, London.

Jonathan P. Bowen FBCS FRSA is Emeritus Professor of Computing at London South Bank University in London, UK; Adjunct Professor at Southwest University in Chongqing, China; and Chairman of Museophile Limited, a consultancy company in the area of museums and IT. In 1994, he founded the *Virtual Library museums pages* (VLmp), part of the WWW Virtual Library, later adopted by the International Council of Museums (ICOM). He was invited to be the Honorary Chair of the first *Museums and the Web* conference in 1997 and was a regular contributor subsequently. More recently, he has been Co-Chair of the annual EVA London Conference on *Electronic Visualisation and the Arts*. In 2013, he was Co-Editor of *Electronic Visualisation in Arts and Culture*, published in the Springer Series on Cultural Computing. In 2017, he co-authored *The Turing Guide*, on the life and work of the computing pioneer Alan Turing, published by Oxford University Press. He is Life Fellow of the British Computer Society, Life Fellow of the Royal Society of Arts and Liveryman of the Worshipful Company of Information Technologists.

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Abbreviations

3D	Three-dimensional
ACM	Association for Computing Machinery
ACMI	Australian Centre for the Moving Image
ACT UP	AIDS Coalition To Unleash Power
AHRC	Arts and Humanities Research Council
AI	Artificial Intelligence
AIDS	Acquired Immuno Deficiency Syndrome
AIML	Artificial Intelligence Markup Language
AMNH	American Museum of Natural History
ANSI	American National Standards Institute
API	Application Programming Interface
AR	Augmented Reality
ARIES	ARt Image Exploration Space
BBC	British Broadcasting Corporation
BCE	Before Common Era
BCS	British Computer Society
BFA	Bachelor of Fine Arts
BLE	Bluetooth Low Energy
Bodleian	Bodleian Libraries
CAD	Computer-Aided Design
CAS	Computer Arts Society
CC	Creative Commons
CDP	Canadiana Discovery Portal
CMS	Collection Management System
COBOL	COmmon Business Oriented Language
CTG	Computer Technique Group
DAH	Digital Art History
DAHL	Digital Art History Lab
DCMS	Department for Digital, Culture, Media & Sport
DMA	Dallas Museum of Art

DMT	Digital Manuscripts Toolkit
E.A.T.	Experiments in Art and Technology
EC	European Commission
ENoLL	European Network of Living Labs
ERASMUS	EuRopean Community Action Scheme for the Mobility of University Students
EU	European Union
EVA	Electronic Visualisation and the Arts
Fab Lab	Fabrication Laboratory
FBI	Federal Bureau of Investigation
FGM	Female Genital Mutilation
Frick	The Frick Collection
GDPR	General Data Protection Regulation
GIS	Geographic Information System
GLAM	Galleries, Libraries, Archives and Museums
HCI	Human–Computer Interaction
HIV	Human Immunodeficiency Virus
IBM	International Business Machines Corporation
ICA	Institute of Contemporary Arts
ICT	Information and Communications Technology
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IIIF	International Image Interoperability Framework
ILS	Integrated Library System
IMLS	Institute of Museum and Library Services
IoL	Internet of Life
IoT	Internet of Things
ISEA	International Symposium on Electronic Art
ISO	International Organization for Standardization
IT	Information Technology
JPEG	Joint Photographic Experts Group
JPL	Jet Propulsion Laboratory
LACMA	Los Angeles County Museum of Art
LGBT	Lesbian, Gay, Bisexual and Transgender
LMS	Learning Management System
LOD	Linked Open Data
LOTI	London Office of Technology and Innovation
MARC	MAchine-Readable Cataloging
MDC	Museums and Digital Culture
Met	Metropolitan Museum of Art
MFA	Master of Fine Arts
MI	Machine Intelligence
MIT	Massachusetts Institute of Technology
MoMA	Museum of Modern Art

MOOC	Massive Open Online Course
MPEG	Moving Picture Experts Group
MR	Mixed Reality
MRes	Master of Research
MS	Master of Science
Mu.SA	Museum Sector Alliance
MVP	Minimum Viable Product
MW	Museums and the Web
NAL	National Art Library
NFC	Near-Field Communication
NLA	National Library of Australia
NLP	Natural Language Processing
NMC	New Media Curation
NYARC	New York Art Resources Consortium
NYC	New York City
OCLC	Online Computer Library Center
OCR	Optical Character Recognition
Pratt	Pratt Institute
QA	Question Answering
RA	Royal Academy of Arts
RCA	Royal College of Art
RFID	Radio-Frequency Identification
RRC	Rapid Response Collecting
SAT	Society for Arts and Technology
SIGGRAPH	Special Interest Group on Computer GRAPHics
SOAS	School of Oriental and African Studies
SVA	School of Visual Arts
TEI	Text Encoding Initiative
TIFF	Tag Image File Format
TMS	The Museum System
UCD	User-Centered Design
UN	United Nations
UNSW	University of New South Wales
URL	Uniform Resource Locator
USB	Universal Serial Bus
UX	User eXperience
V&A	Victoria and Albert Museum
VR	Virtual Reality
VSA	Visitor Service Associate
W3C	World Wide Web Consortium
Watermans	Watermans Art Centre
WAV	WAVeform Audio File Format
Whitney	Whitney Museum of American Art
Wi-Fi	Wireless Networking Technology

WSN	Wireless Sensor Network
WWW	World Wide Web
XML	eXtensible Markup Language
ZKM	Zentrum für Kunst und Medien