

INTRODUCTION

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In 2015, Lev Manovich argued that “To ‘see’ contemporary culture requires use of computers and data science.” Importantly, however, he added that while “seeing enabled by data science may be radical in terms of its scale – how much you can see in one ‘glance,’ so to speak – it continues the humanities’ traditional methodology.”¹ The latter approach involves, at the very least, the comparison and detailed analysis of cultural artifacts, periods, authors, genres, themes, and techniques. Manovich’s comments capture an idea that runs throughout the present volume, namely, that research techniques drawn from the digital humanities and from art history are related to each other and can be deployed in mutually illuminating ways. They both entail acts of seeing and are equally dependent on the quality of research question that motivates the relevant analysis. To that extent, human vision and computer vision are not so far apart. While some scholars have worried that the rise of computational analytical techniques, reliance on big data, and use of quantitative research methods entail the “subordination” of art history to computer technologies, the following essays show how the latest initiatives in digital humanities research relate to and develop key themes that are central to histories and theories of art.² Equally, if computational methods offer the possibility of examining and visualizing data in new ways, art history’s ability to interrogate the very act of looking brings an important perspective to this exercise and to our understanding of the role of the researcher within it.

The present volume offers a broad survey of intersections between digital humanities and the study of art history. Authors focus not only on new technological tools that have been

developed for the study of artworks and their histories, but also debate the disciplinary opportunities and challenges that have developed in response to the emergence and use of those tools. Essays cover a wide range of technical and conceptual themes that define the current state of the field and outline strategies for future development. Contributors debate the extent to which the use of computational methods can reshape conceptions of the art-historical canon and open new branches of research. Equally, however, they explore some of the gaps that have emerged within this branch of study and consider various conceptual biases to which it has fallen prey. The points at which “computer-assisted” and “traditional” methods of analysis come apart are as important for disciplinary self-reflection as is the study of their congruence. As scholars continue to debate the advantages and limitations of integrating computational methods into humanities disciplines, this volume offers a timely perspective on trans-disciplinary developments that are reshaping art-historical research, conservation, and teaching.

“Digital art history” has emerged and gathered impetus over the past two decades and is now a familiar part of the research landscape. This has led to debate about whether the field is a sub-branch of art history, a revolution of the discipline, or just a distraction from art history’s core concerns and subject matter. In 2013 Johanna Drucker drew what has become a classic distinction between “digitized art history” (“one built on the use of online resources”) and “digital art history” (“the use of analytic techniques enabled by computational technology”). The latter, she argues, is “the proper domain of *digital* art history” on the grounds that it can “reveal features of art historical artifacts in novel ways,” “extend traditional methods of observation and analysis,” and “yield “different points of inquiry.”³

Although the term “digital art history” has become familiar, the decision has been made to title the present volume *Digital Humanities and Art History*. This has not been done with the aim

of suggesting the existence of yet another discrete genre within this field. Nor does it seek to challenge the notion of “digital art history.” Rather it signals an intention to probe what the term “digital humanities” means in the context of art-historical research and to examine how scholars have taken up and adapted techniques from the digital humanities for the purpose of generating new analytical tools for the study of visual art. Understanding the connection between the digital humanities and art history is key to conceptualizing “digital art history.” As Jorge Sebastián Lozano has noted, “the technical possibilities of computing have not progressed at the same pace for each field,” and art history has, in many cases, taken up concepts and approaches familiar from literary studies.⁴ Questions concerning what art historians have found useful from other disciplines and how their needs and approaches differ from other branches of humanities scholarship are discussed throughout this book.

Essays problematize the use and impact of digital techniques, identify gaps in the management and analysis of data, and debate the ethics of various initiatives that have emerged from the digital humanities. This includes problematizing reliance on biased archival or canonical material, examining the persistence of unequal access to resources needed to undertake digital humanities projects, and revealing legacies of gender and racial prejudice in technological research and development.⁵ Studying the emergence of new epistemological models in the digital humanities helps to stimulate questions about the ambitions of art history itself, including critical reflection on the assumptions that underpinned the emergence of this field of study.

It is also important to point out that the present volume extends beyond narrow conceptions of “art history.” Chapters showcase ways in which the use of computer technologies can stimulate new approaches to a broad set of topics ranging from the analysis of artifacts and expressive styles from contrasting geographies and time periods, to themes relating to provenance, the art market,

social history, heritage, museum studies, and art historiography. For reasons of space, it has not been possible to cover the full range of innovative projects that are currently being undertaken by scholars in this fast-paced field, but the breadth of examples is representative of recent developments and provides an overview of major methodological approaches and techniques. An attempt has also been made to include a range of different voices and perspectives in the volume. In consequence, contributions have been made by researchers in various branches of art history and visual culture, computer science, digital media studies and informatics, mathematics, engineering, design, software development, heritage, information services, pedagogy, museology, curating, and fine art.

The book is divided into five parts: (1) Histories and Critical Debates; (2) Archives, Networks, and Mapping; (3) Museums: Real, Virtual, and Augmented; (4) Computational Techniques for Analyzing Artworks; and (5) Digital Resources, Publication, and Education. Part I surveys a range of important debates that have shaped the intersection of art history with digital methods of analysis. These include the ways in which art historians manage and analyze data, visualize information, and reflect on their own positions as researchers. Authors are sensitive not only to the ways in which technology is transforming the discipline of art history, but also to productive ways in which such innovations connect to existing methodologies and approaches.

Part II explores some of the cornerstones of digital humanities research – archives, networks, and mapping – and considers a range of practical and ethical issues that arise in the production and use of such digital tools.⁶ Understanding how to manage quantitative and qualitative data and thinking through the implications of different mapping techniques are central to re-evaluating and, in some cases, rewriting familiar art-historical narratives. Chapters in this part of the book examine how the use of technology can bring to public attention works that have

been omitted from museum collections, present hitherto under-represented histories, and stimulate the study of new connections between artists, dealers, and the circulation of art objects. Rather than focusing solely on the answers that digital technologies can provide, essays debate the new range of questions that such technologies can stimulate. This includes, for example, consideration of the ethical issues that arise when digitizing and making public materials that have been created by, and experienced in, small groups and communities.

Part III turns to ways in which new technologies are impacting on museum experience and curatorial strategies. As museums develop their content through techniques of augmented or virtual reality and encourage visitors to navigate collections with the help of mobile devices, the experience of art has undergone radical change. Chapters show that museums can no longer be understood as single “sites,” but rather as visual, discursive, and virtual environments supported by a range of digital platforms. In particular, the intersection between digital resources and gaming offers a new kind of art experience that has the potential to engage a broader public. While digitization and on-line materials have the advantage of broadening access to collections, they necessarily have repercussions for the status of the art object. Against this background, authors debate potential shortcomings of computer technologies for understanding and analyzing issues of complex cultural heritage. Essays reflect critically on the creation and use of digital surrogates and the limitations of experiencing artifacts in virtual or augmented reality. While new technologies have ushered in important mechanisms for the preservation of endangered or lost artifacts, it is also necessary to enquire into the aesthetic, cultural, and ontological consequences of replacing unique objects with digital replicas.⁷ Many parts of the discussion are, therefore, embedded in wider critical debates that motivate the dynamic field of digital heritage and museum studies.

Part IV contains practical guidance for readers interested in using or developing computer techniques for analyzing artworks. While each part of the book combines “state of the field” chapters with discussion of specific projects and, in many cases, examples of the code used to create the relevant programme, essays in this section are specifically concerned with the use and implementation of computational tools, including the mapping of surface structures, 3D and other types of modeling, the use of metadata, image processing, and computer vision. Here – and throughout the volume – theoretical discussion is combined with practical advice and the inclusion of open-source material. Where case studies are used, contributors explain the broader significance of the relevant example, discuss the lessons learned from it, and illustrate ways in which it can impact on, or stimulate the creation of, new projects. Chapters contain, therefore, methodological guidance ranging from how to use and maximize the potential of particular technologies to the identification of pitfalls when implementing such approaches.

It is noteworthy that nearly a third of the essays in this volume (particularly those focused on the production of new computational methods and databases) are co-authored, and that many other contributions build on and extend work undertaken by research groups. Located at the intersection of the humanities and the sciences, the use of digital methodologies in art history has the potential to reshape the social nature of research and to introduce or strengthen collaborative working models and knowledge exchange. By including “how-to” guides, models, and samples of opensource software, it is hoped that this book will stimulate wider conversations, encourage teamwork across disciplines, and help to produce scholars who are capable of taking up and extending the latest analytical and technological methods of investigation.

Over the past decade, computational technologies have transformed not only research in art history, but also pedagogical approaches to the discipline. As technology has become an

integral part of daily life, so too it shapes students' expectations about the delivery of course content, use of analytical tools, and participation in systems of communication within scholarly environments. Building on important work in this area, I considered it important to include a section that examines ways in which museum professionals and university scholars are disseminating their research, integrating technology into educational programmes, and transforming students' learning experiences.⁸ Aspects of this discussion relate to the use of social media, the publication of open access materials, and the creation of methods of connectivity capable of stimulating innovative analytical approaches to new and established fields of study.

By giving rise to mapping and analytical tools that are capable of bringing under-represented artistic networks and career trajectories to light or by visualizing material at a level inaccessible to human sight, computational methodologies promise to disrupt familiar histories and methods of analysis. Indeed, "disruption" is often a term that is used in a positive sense in discussions about the promise of interaction between digital and traditional humanities.⁹ Yet digital methods are, themselves, subject to disruption and are rarely – if ever – completely "clean" or orderly. As many contributors to the present volume note, the development and use of computational tools have been shaped by the untidiness of history and the vagaries of human character: they are subject to accident, glitches, noise, and mismatches between software and hardware. Machinery itself is vulnerable to environmental hazard. As Paul Dourish and Genevieve Bell argued in 2011, "the practice of any technology in the world is never quite as simple, straightforward, or idealized as it is imagined to be. [...] Mess is always nearby."¹⁰ For Dourish and Bell, "mess" relates not only to the relationship between technology and daily life, but also to the contestation of "technological realities."¹¹ Against this background, the digitally informed methodologies discussed in this volume are – like histories of art – rooted in, and subject to, the

unpredictability of human life. The ambition of this book is to examine patterns of mutual support and disruption that emerge as we navigate the productive messiness that underpins the intersection of these two fields.

Notes

¹ Lev Manovich, “Data Science and Digital Art History,” *DAH-Journal*, Issue 1 (2015), 14–35 (33).

² On the “subordination” of art history to digital methods see Claire Bishop, “Against Digital Art History,” *Humanities Futures*, Franklin Humanities Institute, <https://humanitiesfutures.org/papers/digital-art-history/> (accessed 28 November 2019): “subordinating art history [...] to computational analysis” is a method that “perpetuates uncritical assumptions about the intrinsic value of statistics.” For a discussion of art history driven by the exponential growth in amounts of data (including images and visualization) see Maximilian Schich, “Figuring Out Art History,” *DAH-journal*, no. 2, 2016 DOI: <https://doi.org/10.11588/dah.2016.2.24761> (accessed 29 November, 2019).

³ Johanna Drucker, “Is There a Digital Art History,” *Visual Resources: An International Journal of Documentation*, 29:1–2, 5–13 (7 and 8). DOI: 10.1080/01973762.2013.761106.

⁴ Jorge Sebastián Lozano, “Digital Art History at the Crossroads,” in *Critical Approaches to Digital Art History*, ed. Angela Dressen and Lia Markey, in *kunsttexte.de*, 4 (2017), 1–14 (2). On the adoption of techniques from literary studies consider, for example, the impact of Franco Moretti’s, *Distant Reading* (London: Verso, 2015). See also Pamela Fletcher’s discussion of this and other issues affecting the emergence of digital art history in “Reflections on Digital Art History,” *caa.reviews*, June 18, 2015. <http://www.caareviews.org/reviews/2726#.XbbCtJP7SV4>

⁵ See, for example, Roopika Risam, “Decolonizing the Digital Humanities in Theory and Practice,” (2018). English Faculty Publications, Salem State University, 7. https://digitalcommons.salemstate.edu/english_facpub/7 (accessed 28 November, 2019).

⁶ In 2011, Elijah Meeks identified the “pillars” of digital humanities as text analysis, spatial analysis, and network analysis, then adding the potential of a fourth – image analysis. “More Networks in the Humanities or Did Books have DNA?” *Digital Humanities Specialist* (blog), Stanford University, December 6, 2011: <https://dhs.stanford.edu/visualization/more-networks/>. See also Pamela Fletcher’s discussion of this point in “Reflections on Digital Art History”, op. cit.; Miriam Kienle, “Between Nodes and Edges: Possibilities and Limits of Network Analysis in Art History,” *Artl@s Bulletin*, vol. 6, issue 3 (2017), 4–22

⁷ For a recent discussion of this see Carolyn Korsmeyer, *Things: In Touch with the Past* (Oxford: Oxford University Press, 2019), 150–9.

⁸ For previous work in this area see *Digital Art History: A Subject in Transition*, ed. Anna Bentkowska-Kafel, Trish Cashen, and Hazel Gardiner (Bristol: Portland, OR., Intellect, 2005) and Kelly Donahue-Wallace, Laetitia La Follette, and Andrea Pappas, *Teaching Art History with New Technologies: Reflections and Case Studies* (Newcastle: Cambridge Scholars Publishing, 2008). For more recent work see Roger C. Schonfeld and Matthew P. Long, *Supporting the Changing*

Research Practices of Art Historians (Ithaca S + R, 2014) DOI: <https://doi.org/10.18665/sr.22833>; Diane M. Zorich, *Transitioning to a Digital World, A Report to The Samuel H. Kress Foundation and The Roy Rosenzweig Center for History and New Media, George Mason University*, May 2012 (http://www.kressfoundation.org/uploadedFiles/Sponsored_Research/Research/Zorich_TransitioningDigitalWorld.pdf); Stephen Bury with Ralph Baylow, Samantha Deutch, Sumita Duncan, Julie Ludwig, Ellen Prokop and Louisa Wood Ruby, *Art History in Digital Dimensions*, Digital Art History Lab, Frick Art Reference Library, Feb. 2017 (Symposium funded by the Getty Foundation and the Samuel H. Kress Foundation) <http://dah-dimensions.org/report/> (accessed 28 November 2019).

⁹ See, for example, Janneke Adema and Gary Hall, “Posthumanities: The Dark Side of “The Dark Side of the Digital”” in *The Journal of Electronic Publishing*, Vol. 19, Issue 2 (Fall, 2016). DOI: <http://dx.doi.org/10.3998/3336451.0019.201>

¹⁰ Paul Dourish and Genevieve Bell, *Divining a Digital Future: Mess and Mythology in Ubiquitous Computing* (Cambridge, Mass.: MIT Press, 2011), 4–5.

¹¹ Ibid. 4.

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