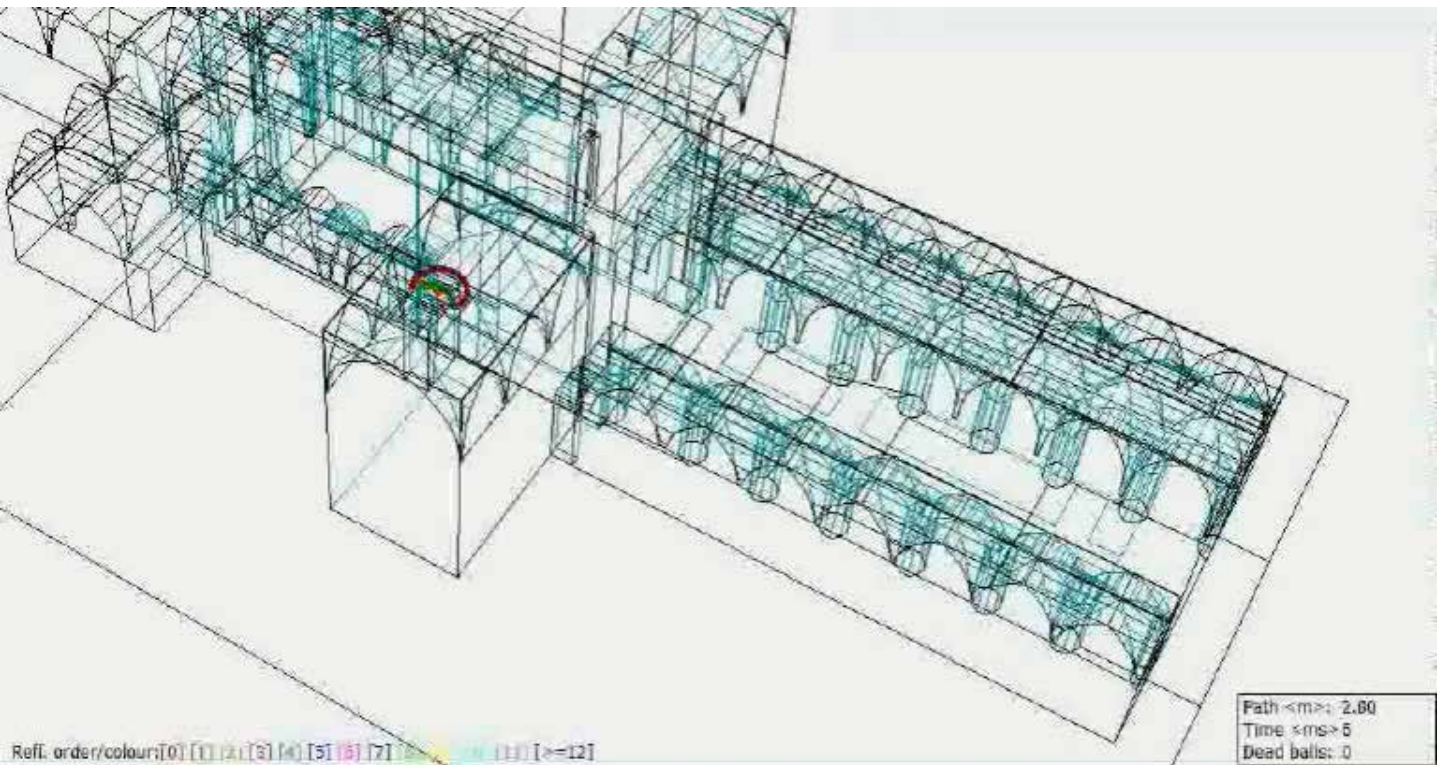Video 1. Point Cloud of Hereford Cathedral, colour scaled to highlight architectural components (nave in blue, Lady Chapel in yellow). (Tower missing from scan; modelled from plans and elevations). Rendering: Justin Underhill.

Video 2.: Odeon Sound Visualization, Hereford Cathedral, (of human singers situated in the choir). Rendering: Justin Underhill.

Creating New Spaces in Art History

Harald Klinke, Liska Surkemper, Justin Underhill

Art History as a discipline of images

The journal's previous issue, "Visualizing Big Image Data" focused on Art History as a discipline of images and how visualization tools in Digital Art History present new research possibilities. A discipline's methods and insights are only as accessible as their evidence, and for Art History this has always structurally necessitated the transformation of artworks – scattered as they are around the world in different places and contexts– into reproductions in various media formats; each with their own media specificity and historical temporality. Thus, the history of our discipline is also a media history, a trajectory of different visual representations and their respective impact on art historical research and teaching.

And of course, the digital revolution is by no means the first time that a technological change has inaugurated new ways of presenting and narrating images and their histories; Heinrich Wölfflin's use of double projections of diapositives changed the former text-based lecture style into a form of "aesthetic pedagogy",[1] and Aby Warburg and André Malraux used photographs and prints to create larger and movable image templates as research instruments of visual comparison, classification and orientation (fig. 1 and 2).

Today, the computer allows us to go beyond analyzing a few pictures at a time by processing thousands and millions of images at once and bringing it into new visual structures (fig. 3). Whole art collections are now not only represented by long spreadsheets of textual metadata (including the name of the artists, title of artwork, and date), but also by image clusters showing a 2D body of work. Visualizations like these allow us to discover and document long-term diachronic and stylistic changes which are overlooked or oversimplified when we restrict ourselves to smaller sample sets.

This creates a new type of imagery, visualizations of Big Image Data (BID). Such visualizations of image clusters and collections may be categorized as what W.J.T Mitchell called metapictures in his famous publication on "Picture Theory": "The metapicture is a piece of movable cultural apparatus, one which may serve a marginal role as illustrative device or a central role as a kind of summary image, what I have called a

Figure 1: Aby Warburg, Mnemosyne Atlas, panel 37, historic photography: Warburg Institute, London.

'hypericon' that encapsulates an entire episteme, a theory of knowledge. [...] In their strongest forms, they don't merely serve as illustrations to theory; they picture theory".[2] With his fundamental conviction *ut pictura theoria* Mitchell called for a mixed media approach (meaning the use and production of images alongside texts) to help theorists more fully understand visual culture—a practice he continues to investigate in his current work.[3]

As a discipline, Art History now has the opportunity to expand its traditional communicative framework by creating its own meta-images as a form of theory. To supplement (or perhaps challenge) their theoretical interests in the juncture of visual structure and semantic content, art historians can experiment with picture making themselves and explore how these BID visualizations produce new art historical insights. In addition to Mitchell's theoretical interest in the digital image atlas and its historical connections to patterns of madness,[4] one must also take into account the effort of contemporary research projects, DAH hackathons and summer schools that work on establishing systematic approaches.[5] To create valuable outcomes such Digital Art History

Figure 2: Maurice Jarnoux, André Malraux in front of photo reproductions for his book "Le Musée imaginaire", 1947. Photo: MACBA Barcelona (Museu d'Art Contemporani de Barcelona).

projects are in need of interdisciplinary teams that entail more than art historians and technologists. Therefore, Tracy Berg-Fulton et al. propose in this issue "A Role-Based Model for Successful Collaboration in Digital Art History" to establish standards for assembling a team for a contemporary art historical research project.

Of course, Art History is much more than a discipline of flat, 2D images. Even digital image atlases and metapictures often surpass the limitations of arranging the large image sets on x- and y-coordinates by adding the z-axis—thus, creating a three-dimensional space in which a more complex relational network can be visualized and navigated (fig. 4).[6] Art History is centrally concerned with vast array of three-dimensional objects, such as sculptures, and spaces, such as architecture. Digital technologies allow the creation of virtual spaces, which in turn allow us to simulate and compare aspects of a visual culture's three-dimensional timespace that cannot be communicated as a single, still image. With the third issue, then, it is fitting to focus on the third dimension in Art History, and the digital realm that continues to mediate and transform it.

Figure 3: Damon Crockett, direct visualization technique Growing Entourage plot of Instagram photos, 2016.

Figure 4: Matthias Bernhard, Screenshot of browser application "Guggelman Galaxy" in which the relational network of the art collection can be experienced, 2016.
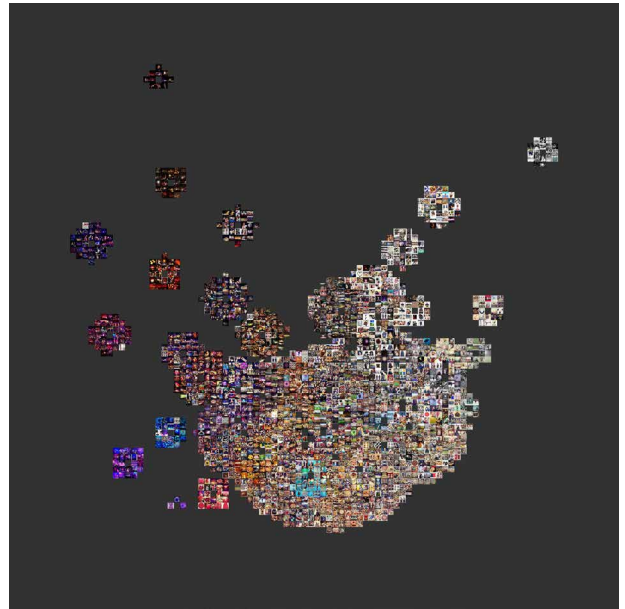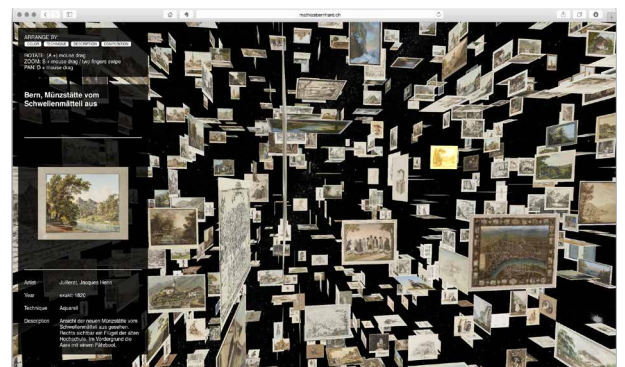
Art History as a discipline of objects and space

Mario Carpo's featured article "Big Data and the End of History" functions as a hinge between journal issue #2 and #3, discussing how the introduction of Big Data has changed our culture of science, design thinking and the narration of architecture. He shows how the need for data compression technologies allowed for certain aesthetics in architecture, and how nowadays design processes change by integrating the "messy directness" of nature, which is only possible due to unlimited data storage and retrieval. Carpo foresees not only a dismissal of ancestral story-building but also of story-telling—arguing that we may be losing the need for a continuous narration and theory due to the introduction of search engines.

The next three articles converge upon the problem that architectural reconstruction poses to both the disciplinary configuration of traditional Art History, and its use as an evidentiary tool. Although visualization is a common component of contemporary architectural design workflows, and has been widely used by art historians and museum professionals for over twenty years, as a research practice it nonetheless remains constrained by traditional Art History's vision of the researcher as a solitary, self-sufficient humanist. Sander Münster, Kristina

Friedrichs, and Wolfgang Hegel's article, 3D Reconstruction Techniques as a Cultural Shift in Art History?" addresses this problem, documenting the standard workflows specific to Digital Art History and architectural heritage, and in the process advocates for interdisciplinary collaboration between art historians and the computer graphics specialists that use these visualization tools. In the same vein, Stefan Boeykens, Sanne Maekelberg, and Krista De Jonge reflect collectively upon a decade of teaching and producing architectural reconstruction at the University of Leuven in "(Re-)Creating the past: 10 years of digital historical reconstructions using BIM". The authors highlight the underdiscussed and undertheorized problem of uncertainty in reconstruction, and the ways that Historical Building Information Modelling (HBIM) allows teams to document, accommodate, and even visualize such uncertainty. Finally, Una Ulrike Schäfer fastidiously catalogues the vocabularies of uncertainty that currently circulate in archaeological and architectural reconstructions as visual outputs of viewing platforms and user interfaces, showing how far we are from exhausting the design lexicon that is theoretically possible for digitally sharing the past with others.

Engaging Critique

We believe that it is vital for the relevance of this journal (and the subfield it represents) that it is not a self-partitioned pool of enthusiasts; we must listen
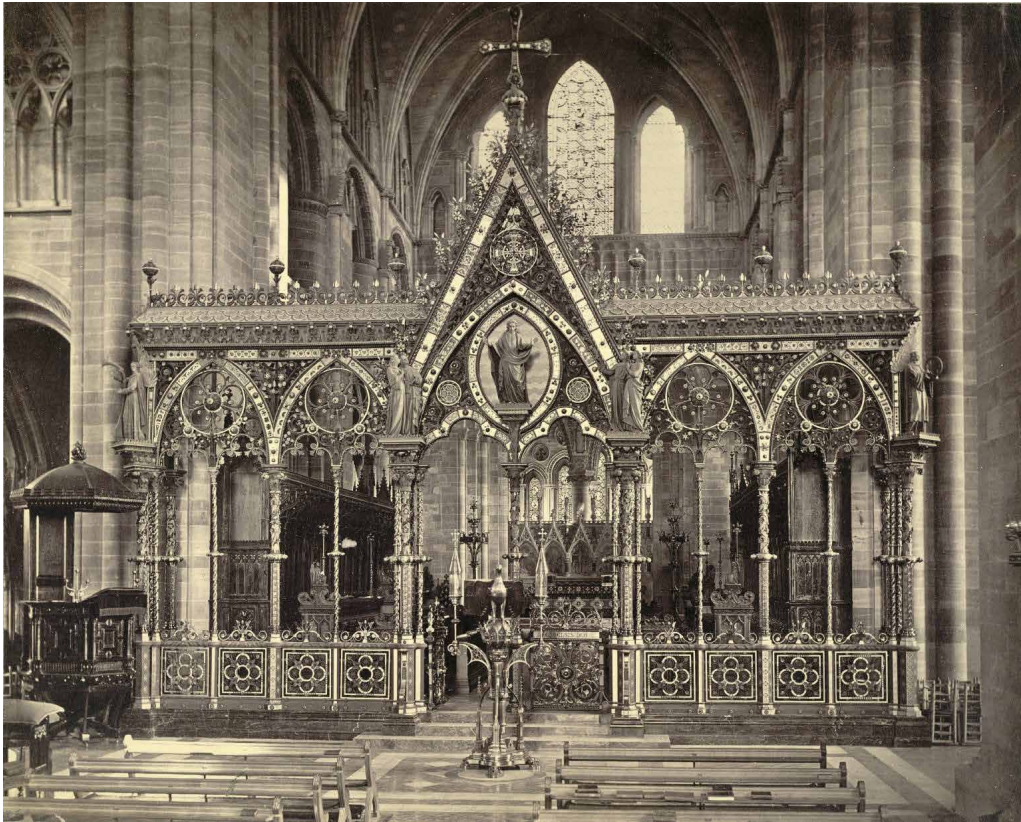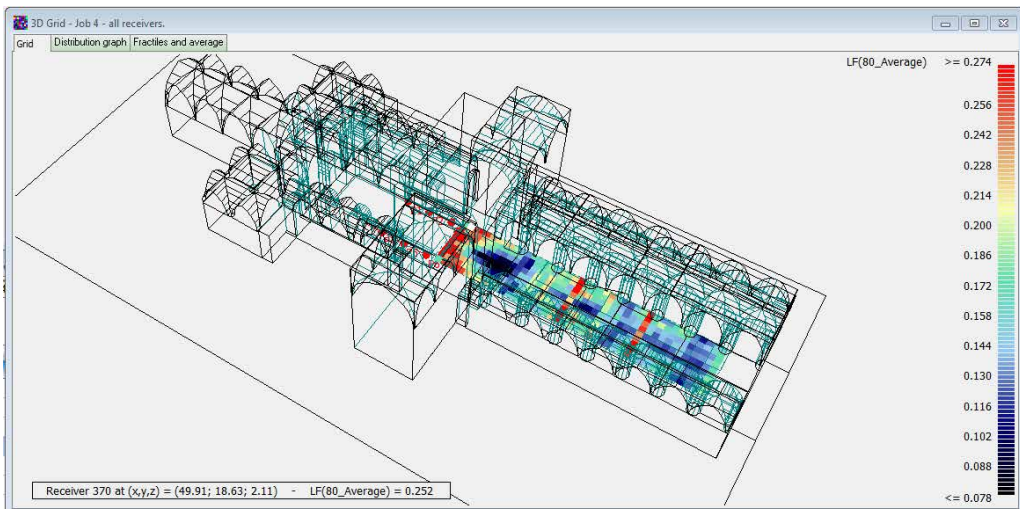
Figure 5: The Hereford Screen at Hereford Cathedral prior to its installation at the Victoria and Albert Museum, London.

Figure 6: Odeon grid map showing distribution of C80 in nave and crossing of Hereford Cathedral, (for human singers situated in the choir). Digital image: Justin Underhill.

to well-argued criticism in order to stay aware of what direction(s) we want to go. Thus, we have set up a critical section with three articles which interrogate the sense and purpose of Digital Art History.

Ulrich Pfisterer's article on "Big Bang Art History" poses general questions as to whether Digital Art History is really the "next big thing" on the scientific horizon. Claire Bishop argues "Against Digital Art History", by first discussing problems with digital Art History in relation to neoliberal metrics, and ending with a suggestion how the 'distant reading' method might nevertheless be deployed critically in the analysis of art. Giacomo Mercuriali's contribution on "Computational Imagination and Digital Art History" explores the paral-lel rise of computer vision technology and Digital Art History. He frames the conflicts that inevitably arise between computer scientists and art historians in this new discipline and describes concomitant epistemological problems. He closes with an outlook on how inter-disciplinarity can be achieved.

Welcoming a New Editor

This third issue sees an addition to our editorial board. Justin Underhill is currently a Mellon Postdoctoral Fellow at the University of California, where he specializes in digital documentation (laser scanning and photogrammetry) as well as 3D reconstruction in a variety

Editors: Liska Surkemper, Harald Klinke. Photo: Janusch Tschech. Artwork "Nachschub": Li-Wen Kuo.

Welcome to the IJDAH-team: editor Justin Underhill.

of formats, including VR. He is particularly interested in the potential for computer graphics and digital reconstruction to propose new phenomenologies of visual experience, in particular those that challenge or undermine narratives that equate the objects of art history with the still, immutable surfaces so often suggested by photographic reproduction. In a recent study the Hereford Screen, a monumental cast iron choir screen now installed at the Victoria and Albert Museum in London, he used laser scanning and photogrammetry to digitally capture both the screen and the space in which it was intended to be permanently displayed, Hereford Cathedral (fig. 5; laser scan in Video 1). Using advanced acoustic simulations, he was able to show how sounds from the choir would have been transmitted throughout the cathedral (Video 2), and that when the screen was originally installed, the sculptures of musicians placed atop the screen would have visualized an important spatial effect known as source broadening for observers in the nave (fig. 6).[7]

Justin works broadly on visual cultures of Western Europe and the Americas from 1200 AD to the present, and believes that Digital Art History can supplement and facilitate research into the corpora of art-historical subfields that often go overlooked for lack of textual documentation; as a comparativist, he also utilizes research from cognitive neuroscience and perceptual psychology to make connections between the virtual spaces documented by historical reconstruction. He be-

lieves passionately in advocating and promoting forms of research that are not merely textual, and looks forward to developing the International Journal for Digital Art History as a venue for experimental digital research visualizations.

Further, we are in the process of developing a new workflow for *International Journal for Digital Art History*. We have always conceived of the journal as an experiment in digital publishing, and in order to expedite the publishing process, each article will be released as soon as it is available; readers will not have to wait for the entire issue to be published. This will ensure a quicker publication that keeps in touch with the rapid developments in this field. Once we have all articles together, it will eventually be bound to one issue in a print version.

Call for papers #4

Digital Art History is often described as a methodological addition to Art History. However, in the next issue we want to explore the digital transformation of art institutions: The departments of Art History, its libraries, archives and the museums are changing profoundly. Now is the time to think about: What will be the future of such institutions that are "doing art history"? How will Art History look in 10 years from now? Please look on the last page for the full call for papers.

Notes

¹ Christopher P. Heuer, "Bruno Mayer. Glas-photogramme für den kunstwissenschaftlichen Unterricht", in *Kunstgeschichten 1915. 100 Jahre Heinrich Wölfflin: Kunstgeschichtliche Grundbgriffe* (Passau: Klinger, 2015): 229.

² W. J. T. Mitchell, *Picture Theory: Essays on verbal and visual representation* (Chicago: The University of Chicago Press, 1994): 49.

³ W. J. T. Mitchell, *Seeing Madness: Insanity, Media, and Visual Culture,* 100 Notes, 100 Thoughts: Documenta Series no. 83 (Berlin: Hatje Cantz, 2012).

⁴ W. J. T. Mitchell, *Method, Madness and Montage*, youtube-Link: https://www.youtube.com/watch?v=1eQzaENZoHo. Date accessed: 13 july 2018.

⁵ See for example the summaries of workshops from Nuria Rodrigez and Sonja Gasser in this issue: 188-199.

⁶ See article Mathias Bernhard, "Gugelmann Galaxy: An Unexpected Journey through a collection of Schweizer Kleinmeister", *International Journal for Digital Art History*, no. 2, oct. (Munich: Graphentis, 2016). Available at: http://journals.ub.uni-heidelberg.de/index.php/dah/article/view/23250. Date accessed: 13 july 2018. doi:https://doi.org/10.11588/dah.2016.2.23250.
You can read more here: Justin Underhill, "Sound and Vision in the Hereford Screen", *British Art Studies*, no. 5, https://doi.org/10.17658/issn.2058-5462/issue-05/junderhill. Date accessed: 13 july 2018.

Survey

Do you like the content and format of the journal? What would you like to see in the future? What would you like to tell us?

Please take part in a one-minute-survey until September 15:

https://goo.gl/Xqzg3z
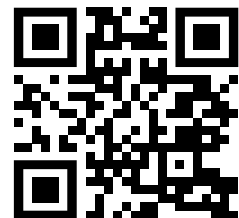
We can't wait to hear your thoughts!

Harald Klinke has a Ph.D. in art history and a Master of Science in Information Systems. Currently he is Assistant Professor at the Ludwig Maximilian University, Munich, and member of the Program Committee of the DFG-funded project "The Digital Image". He conducts research on visual communication, digital media, and Big Image Data in art-historical contexts.

From 2008 to 2009, he worked as a Lecturer of Visual Studies (Bildwissenschaft) at the Art History Department of the University of Göttingen. From 2009 to 2010, he conducted research, supported by a grant from the German Research Foundation (DFG), as a Visiting Scholar at Columbia University, New York. He has published books on art theory, digital images and digital transformation.

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Liska Surkemper is a Ph.D. candidate for architectural and cultural theory at the Technical University Munich. She conducts research on visual epistemology and the interrelationship of pictures, architecture and economy.

From 2010 to 2014, she was a researcher and lecturer at the Department of Art Research and Media Philosophy at the University of Arts and Design Karlsruhe. She was also coordinator for the DH project "Memory of Scientific Knowledge and Artistic Approaches", which was supported by the German Federal Ministry of Education and Research (BMBF). Together with computer scientists, designers and arts scholars she helped develop the web application "Presenter": a tool for visualizing, sharing and archiving scientific and artistic knowledge.

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Justin Underhill is a Mellon Postdoctoral Fellow in the Digital Humanities at UC Berkeley. He earned his PhD in Art History from Berkeley, completing a dissertation, "World Art and the Illumination of Virtual Space," that uses advanced software to reconstruct the architectural contexts in which works of art were displayed. Such research explores the relation between pictures and the lighting of the space in which they were originally viewed. Underhill continued this work in his prior appointment as a Mellon Postdoctoral Fellow in the Digital Humanities at the University of Southern California. Presently, among other projects, he is developing art.rip, a site dedicated to digital capture, forensic visualization, and the history of art.

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