

Big Image Data as new research opportunity in Art History

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First of all, we would like to thank the DAH-community for the high level of interest and for the overwhelmingly positive responses to the first issue and to the call for contributions. This interest in the DAH-Journal shows that Digital Art History has come of age. After tweeting that the first issue was available and free to download, the tweet was shared exactly 99 times reaching over 30,000 viewers. The journal has been downloaded more than 8,000 times and over 500 readers from all over the world have registered for the newsletter – both numbers are still increasing. What a fantastic start for the DAH-Journal and yet another step forward toward strengthening the community of likeminded scholars.

In the first issue, we discussed “What is Digital Art History?” and learned that it is not new but has perhaps been slowly evolving since the 1980’s. That seems to be changing now due to new technology, thus emerging new fields of research in DAH and increasing institutional support. Many have noticed, after Lev Manovich’s article, that Digital Art History is largely being driven by data. This ought to be a new paradigm in Art History that spurs new questions: What does working with digital images mean? What possibilities do large data sets present? What are the challenges

ahead? And what are the opportunities for art-historical research methods?

While digital methods open up new opportunities, at the same time they question the objectives of our discipline: What does connoisseurship mean in the digital age? What is a master narrative today? What exactly is the *digital* in historical research on art? To address these questions, this current issue focuses on Big Image Data (BID) and the changes in the catalogue of art-historical methodology that come with it.

Big Data and BID open up tantalizing new vistas to the art historian. BID as a sub-category or—better yet—an extension of Big Data affords the possibility of processing and analyzing massive amounts of visual material using computational methods. Among other things the computer creates meta-visualizations comprised of an image data corpus.

Unfortunately, BID is perceived in some quarters as a threat—lack of familiarity with digital technology awakens fears that art historians as traditionally conceived of them will be supplanted by screen-bound technophiles stripped of all aesthetic sensibility. But while some may say that theory and methodological

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approaches past and present will become wholly obsolete thanks to Big Data, we beg to differ. We believe that as well as expanded access to image banks, BID will also provide art historians with a whole new set of analytic tools, adding new tonal range to our discipline without discarding any of the traditional art historical methods.

This is the school of thought powerfully propagated by Heinrich Klotz—founder of the ZKM (*Center of Art and Media*) and the HfG Karlsruhe (*University of Arts and Design*) in the early 1990s—who encouraged everyone to embrace new technologies in art: “I always say, we do not discard the grand piano, only because we have the synthesizer. We take the synthesizer *and* the grand piano, video *and* painting!”¹ In other words, we do not throw out iconology and iconography just because we have BID. Rather BID should enhance these traditional skills.

Heinrich Klotz saw the need for institutions which would house artists, philosophers, architects and art historians (like Jeffrey Shaw, Boris Groys, and Hans Belting), who would systematically analyze and discuss the opportunities offered by new media in art even—or *because*—this was still unknown territory. In this issue of DAH-Journal, we pursue the same line of thought by encouraging authors to write about BID.

We are living in a world in which we communicate visually like never before and Art History has the experts to analyze and reflect upon such visual artifacts. The digital’s predicted impact on art-historical methodology and its repeated questioning of Art History can be viewed positively, because it is helping bring our discipline into the 21st century.

Of course, one could ask if the projects and research approaches presented here, which deal with large amounts of image data, can realistically be labeled BID. Big Data means more than just a large quantity of data; it is the *processing* aspect that differentiates Big Data from mere data per se. One way of defining it is by the *three V’s*: “Big data is high *volume*, high *velocity*, and/or high *variety* information assets that require new forms of processing to enable



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(Photo: Janusch Tschech. Artwork “Nachschub“: Li-Wen Kuo)

enhanced decision making, insight discovery and process optimization.”² The problem of extending the Big Data definition to BID *and* characterizing art-historical projects as such is, that processing image data is a much more complex task than analyzing texts with computational methods.

Furthermore, it remains unclear how art historical data can be operationalized for digital research purposes; issues surrounding access rights, technical problems to do with digitization of images and quality of scans are just some of the obstacles still to be overcome. Computer Vision, i.e. making the computer ‘see’ in a sense that it can differentiate, compare, and thus categorize images, is one of the biggest challenges being faced right now – by the scientific community as well as for software giants, such as Google. As Richard C. Johnson from Cornell stated in the interview in our first issue: “The time commitment to gain access to scientific quality data has proven formidable. It remains a high barrier.”³

Nonetheless, there are already a variety of innovative approaches allowing researchers to handle millions of images with unprecedented facility. And although BID is still in its infancy, we see this not as a shortcoming but as an opportunity to critically engage with the exciting developments this emerging field has to offer. The articles and case studies gathered here illustrate the rapid development the field has seen by mapping the progress of various applications of BID to real world praxis. They also suggest ways in which it will and should – or should not – develop in the future.

Harald Klinke’s introductory article “Big Image Data within the Big Picture of Art History” drills into the nature of the digital image to the information layer that lies beneath it. Secondly, it poses the important question of what art historians can extract from BID in information terms. In what ways can the digital code behind the forms, colors, etc., which one sees as a recompiled image, increase an understanding of and ability to manipulate an image?



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Maximilian Schich, the featured author of this issue, begins with a bang in his article “Figuring out Art History”, introducing the reader to a new definition of art history. He invites us to take on a different perspective on our discipline by introducing a systematic approach which is now opening up through the possibilities of Big Data and BID.

Next, the contributions of Babak Saleh and Mathias Bernhard both analyze and work with digitized corpora. They focus on different collections and approaches to archiving, retrieving and presenting those large multimedia datasets. While Saleh investigates low and high visual features and explains the methodology of metric learning approaches in order to achieve automated classifications, Bernhard takes the reader on a journey into the Gugelmann Galaxy. This latter project allows users to explore a collection of digitized images and texts in an immersive three-dimensional cloud.

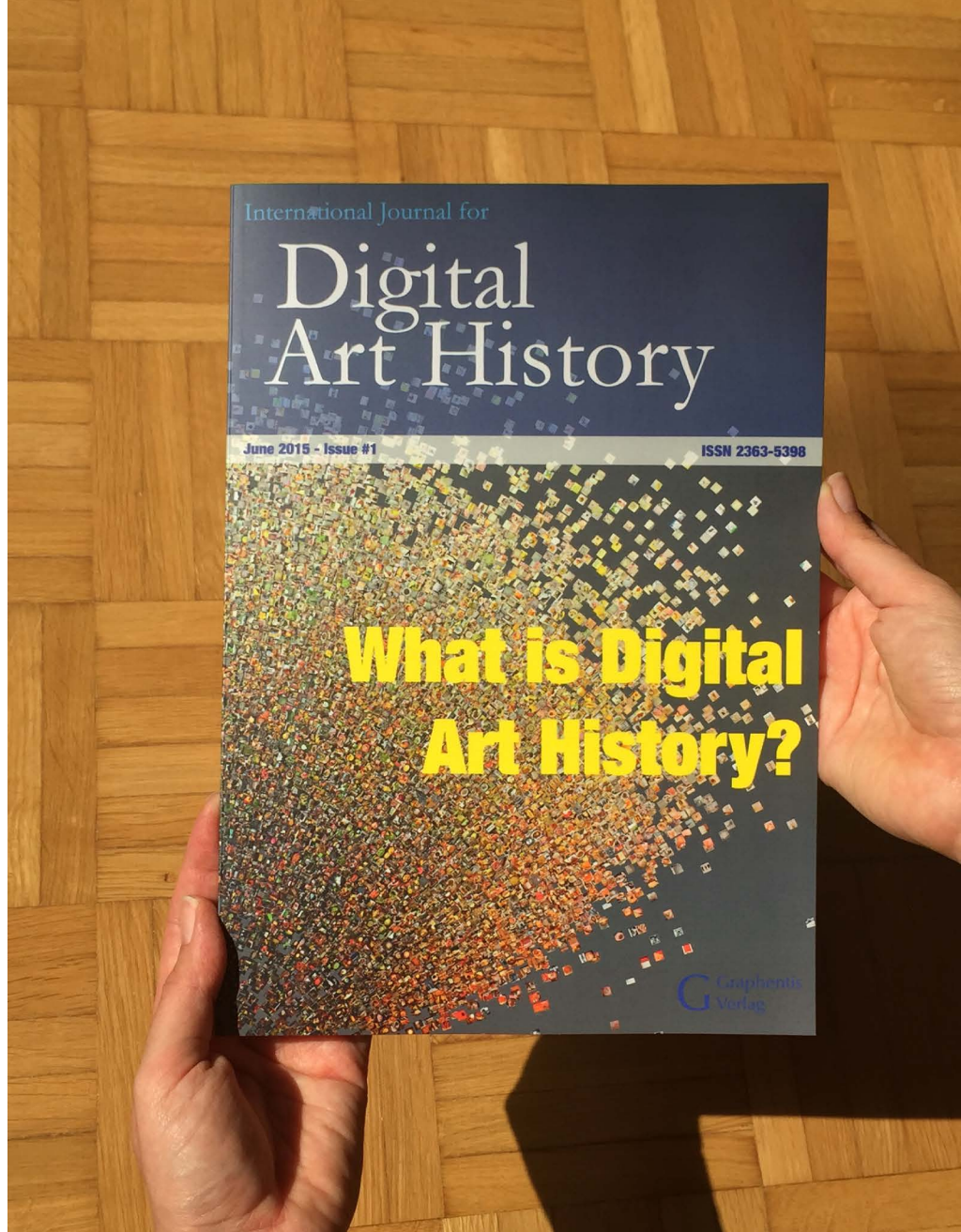
Stefka Hristova describes why and how to combine methods of Art History and Digital Humanities, and the knowledge gained by integrating cultural and visual knowledge as well as data science. She demonstrates this method on a case study of Aby Warburg’s *Mnemosyne Atlas* and emphasizes, that the visualization mode used is always imbricated in a complex network. A network that is not only algorithmic but also historic. Matthew D. Lincoln analyses the

development of a professionalized and highly centralized printmaking industry in northern Europe during the mid-sixteenth-century by using network analysis.

We also interviewed George Legrady, Professor of Interactive Media at Santa Barbara, who, since his beginnings as an analog photographer became an early adopter of digital technology, integrating and interrogating the use of computational methods in his own work. He has pioneered in the artistic use of Big Data visualizations at the intersection of Technology and the Arts.

This issue also includes two case studies of projects that deal with large data sets and detailed reviews of workshops and summer schools on digital art history to showcase how institutes worldwide are engaging students and researchers interdisciplinarily in our discipline.

At the end, we would like to share some news concerning the publication itself. What we learned from the website analytics within the last months is: 20,61% of our readers are on mobile devices. While a pdf-file is great for print and on a big screen, it is difficult to read on a display on a smart phone. Since we believe, this journal is also an experiment on what an Open Access journal could be for Art History, we are trying something new with issue #2. We are now also publishing in the epub-format. This open standard is great for small screens. We hope you



like it. Please, send us your experience; we are looking for the best way to bring you content as comfortable as possible.

Paper is still an essential medium for reading. Thus, we have also published the journal in print. And it looks beautiful. We are proud to say, in the digital age, to weight a book in your hand, flip through the pages and read in high quality print is still an experience.

At the same time, we are excited to see how the digital will change the way we publish, the way we access and analyze research data, and in the end possibly the way we think. On this journey, there are opportunities that can be pursued with heartfelt passion, but it also needs a critical eye to keep track on the direction we follow. What do we want Art History to look like in 10 or 20 years? Now is the time to do the first steps.

Notes

1 Heinrich Klotz, *Rektoratsreden* (Hamburg: Ausnahme-Verl., 2009), 90 (editor's translation and italics).

2 Douglas Laney, "The Importance of 'Big Data': A Definition," in: Gartner, 2012 (editors' italics). <http://www.gartner.com/resId=2057415>.

3 Richard C. Johnson, Park Doing, "On Applying Signal Processing to Computational Art History – an Interview," *International Journal for Digital Art History*, no. 1 (2015), 89.

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