

## Doing Art History Digitally / Doing Digital Art History?

Johanna Drucker

Until someone produces a work of digital art history that has to be cited by art historians to advance their own work in the field, digital projects will not be taken seriously as art historical scholarship. It's that simple. No matter how deep a repository is, how special the wow-factor-effects are for virtual viewing or surrogate manipulation, until an argument is made using digital means that changes our understanding of what an artist or art object is, what the social life and history of art practice might be, or how our basic knowledge of art is constituted, "digital art history" will remain a sidebar to the field.

I would argue that such work has already been produced, but in ways that have not announced their intellectual contribution as clearly as they could. Other, cutting edge engagements with the digitally encoded condition of images, and what makes them tractable for computational analysis, have also been produced, but art historians have not necessarily paid attention to them. Before we can go ahead, we need to assess where we are and what digital projects have done to date, where the sometimes subtle seeming and other times profound but not fully articulated movements of the deep tectonic plates undergirding the field have occurred.

Shifting the perception of digital art history from technical services to intellectual interventions is one part of that move. Pushing critical issues about the ontology of art objects and epistemological matters that are proper to the domain of art history into dialogue with computational techniques is another. What are the cutting edge questions? How do they benefit from and/or inform the development of computational techniques? Addressing the logistical, institutional, cultural, professional, and other matters that attend to these changes raises yet another set of challenges—whose work is rewarded, how is it assessed, sustained, curated, and cited.

In the last two decades, our work habits have turned all of us digital. By this I simply mean that we spend an enormous amount of time in front of our networked computers or with other devices in hand tracking references, images to put into presentations, or looking at facsimiles and other materials online. We may, of course, also go to the museum, library, archive, or gallery to consult analogue originals that do not exist online, but the once-dominant economics of scarcity that governed scholarship has been replaced by an economics of excess and access. The challenges? To find what is online, be able to track provenance of digital materials and images, to vet the authenticity and authority of digital and born digital scholarship, and to take our work into online environments for publishing. These are logistical challenges. More exciting and unnerving (to some) are intellectual challenges. What digital work in art history has been and/or will be a game changer that re-orient scholarship and pedagogy? We all use digital scholarship to proceed with their own work, but often without recognizing the — either for its contributions to traditional debates or for the ways in which its engagement with computation contributes to or challenges methodology or received argument— before digital art history will come fully of age.

What we already know is that online access to images has become familiar and habitual. The early mantra of the digital humanities, a belief that drove such projects as the long-standing *William Blake Archive*, was that the networked environment allowed us to aggregate geographically distributed materials in a virtual space (our desktop).<sup>1</sup> This has become such a commonplace experience that we take it for granted, though the care that went into color correction, calibration, and quality control in the Blake project are certainly not the norm in online materials, which have often fallen very far from their

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<sup>1</sup> William Blake Archive (<http://www.blakearchive.org>)

original tree and been remediated many times in the process (scans taken from four-color half-tone reproductions of transparencies photographed from the images and so on).

Our expectations rise quickly, however, and now every cultural institution struggles to make some significant portion of its collections available online.<sup>•2</sup> Not only images of the collections, but metadata, and interpretative material, and some kind of content management system and web development are required to make these sites work. Few are actual repositories, with depth, breadth, database search and query functions, and almost none talk to each other. The concept of aggregation, important at the project level, is now being pushed into disciplines and subject specialization areas. Projects like HERA, Nines, and RekN, all make use of various technical solutions (linked open data, xml wrappers, or other meta structures) to federate (unite at the search level), integrate (make into a single collection), or aggregate (keep separate but connect in a list of references) collections of online materials that are useful in a single domain. ••••<sup>3</sup> This work has yet to be done for Art History, and the gap points to a possible task ahead: creating a global art history portal of online resources. This would need to be ranked, vetted, and maintained, but would serve the purpose of making digital resources visible, providing a means of identifying and even assessing digital work in art history, and creating a resource for scholarly work and pedagogy. Such a Commons should point to publications as well as repositories and resources.

Expectations lead to problematic solutions, some of which have a high overhead for little added value. Virtual museums like Muva •, or the use of Google street-view for the creation of online museum sites, seem to replicate only a simulacral experience of viewing, taking up more digital than intellectual bandwidth.<sup>•4</sup> Those looking for the “new” contribution of digital technology to their field will be disappointed if they wait for special effects in virtual worlds rather than getting to know the complex functionalities enabled by computational techniques. The intellectual work of knowledge design is on the back end, and the specificity of digital art history has to be encoded in the infrastructure, not just displayed on the screen. What is an art historical object of knowledge and *how* is it produced? Can we model the social production of meaning, the ways reception is production, or interpretation could be inscribed in traces that become framing arguments for engagement with works? The answer is yes, and in fact, this is going on, but, to reiterate, such work needs to be made explicit, called to attention, as part of the basic business of art history in digital environments where engagement with metadata, display, provenance, access, mash-ups, and other activities have changed the field.

One area of promising activity is that of virtual conservation and reconstruction. Some of the results of experiments in this realm are mixed, and we may respond with scorn, snickers, or disdain to the garish solutions or awkward reconstructions presented in digital format.<sup>5</sup> But the very fact that these can take place without intervention on an object or precious artifact, and that the record of projections about what constituted an historically authentic version of any particular image or object can now be kept as a series of digital artifacts creates another realm of study.<sup>••</sup> Throughout the history of art, restoration projects have violated aesthetic objects in a variety of ways. Now the terms on

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<sup>2</sup> British Museum Online ([http://www.britishmuseum.org/explore/online\\_tours/africa/africa\\_05/bronze\\_head\\_of\\_augustus.aspx](http://www.britishmuseum.org/explore/online_tours/africa/africa_05/bronze_head_of_augustus.aspx)).

<sup>3</sup> Hera ([www.heranet.info](http://www.heranet.info)), NINES ([www.nines.org](http://www.nines.org)), RekN (<http://earlymodernonlinebib.wordpress.com/category/rekn-renaissance-english-knowledgebase/>); also, Perseus Digital Library ([www.perseus.tufts.edu/](http://www.perseus.tufts.edu/)), with its remarkable functionality, and Pelagios ([pelagios-project.blogspot.com/](http://pelagios-project.blogspot.com/)).

<sup>4</sup> Google Art Project (<http://www.googleartproject.com>)

<sup>5</sup> Digital Sculpture Project (<http://www.digitalsculpture.org>)

which the purported authenticity of a look, style, production method, technique, appearance or any other features of a work are conceived can be extracted from these attempted reconstructions. A history of projections, constructions, extrapolations, errors, mistakes, imaginings – this is a fascinating contribution to the representation and expression of visual knowledge as an interpretative field. In the fields of archaeology and architecture, speculative reconstruction benefits from the knowledge of engineers and, for earlier periods, archaeologists and anthropologists, in creating models of the behaviors that create space, not merely the physical form of imagined structures.<sup>•6</sup> While such models – physical and behavior-based – can be created in analogue formats, the fluidity of reformulating their parameters and refiguring the visualization of hypothetical results is transformative.<sup>•7</sup> Changing a variable of stress, or material strength, or light angle, creates a series of images for investigation, research, and study.

Modelling techniques are far more complex and flexible in a digital environment than an analogue one. But analogue approaches to contrast and comparison meet the digital in other ways. The analysis of architectural forms, styles, structuring/structural principles are insights into the diffusion of engineering knowledge as well as stylistic trends. Stephen Murray's has created an extensive collection of digital models of gothic cathedrals in France.<sup>7</sup> His organized array of these models into a sequence of increasing size and varied proportion is striking in its visuality.<sup>•8</sup> No other demonstration of the ways these cathedrals compare would be as effective as his dramatic visual layering along a single axis so the changes in height, width, and proportion can be grasped immediately. Questions spring to mind as a result, and the display is not a final fixed image of results of research, but a platform in which to begin inquiries. The same can be said for the network analysis produced by Anne Helmreich in her study of the sales patterns of the Goupil brothers in late 19<sup>th</sup> century Europe. By transforming sales and auction catalogue information into a data set that could be visualized, she exposed some counter-intuitive findings about the popularity of artists, share and size of art markets, and other matters.<sup>•9</sup> While this work could be done without digital displays, the concept of a social network has come to the fore and taken shape in a radically shifted way on account of the visualization and data analysis tools available.

Material sciences offer a rigorous and useful set of instruments for data gathering from art historical artifacts, as in the InscriptiFact Project.<sup>•10</sup><sup>•11</sup> Addressing the statistical and probabilistic aspects of data use and analysis in combination with critical questions about production of value, circulation of materials and knowledge, tracking trade and diffusion of pigments and other elements of production will be the big data challenge for art history ahead. Mapping these data onto geographical visualizations and timelines will expose patterns that simply can't be grasped without these tools. Combining these with post-colonial theory, political economics, and the social history of art will have its own impact and effects as will other large data analyses. Because visual images are less tractable in digital code than alpha-numeric expressions of knowledge, the remediation necessary to turn images into code factors in every instance of computational use, display, or analysis. But for a field like connoisseurship, big data combined with close reading offers a dramatically expanding horizon. The focus can shift from close reading of an object to an analysis of its production, from a static to a processual understanding of its identity. The terms of connoisseurship change from fetishization of surface features to

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<sup>6</sup> T.Zuk, S.Carpendale, and W.D. Glanzman, "Visualizing Temporal Uncertainty in 3D Virtual Reconstructions". *Proceedings of the 6<sup>th</sup> International Symposium on Virtual Reality*, pp.99-106, 2005.

<http://www.sci.utah.edu/~kpotter/library/papers/zuk:2005:VTUR/index.html>

<sup>7</sup> Stephen Murray, <http://www.mappinggothicfrance.org/>

<sup>8</sup> Bruce Zuckerman, Marilyn Lundberg, and Leta Hunt, <http://www.inscriptifact.com/aboutus/index.shtml>

analysis of the sequence of production.<sup>••9</sup> The singularity and autonomy of objects also dissolves into networked systems, as each object is demonstrated to be unique and also a transactional element within a community.

At a large scale, Lev Manovich's cultural analytics, problematic in many ways, has none-the-less demonstrated proof of the concept that distinctive features of images can be extracted automatically/computationally and analysed, then organized according to parameters that display them in a legible fashion.<sup>••10</sup> Again, quibbles and quarrels with these tools abound, and it often seems that cultural analytics are a platform in search of a problem, but the *One Million Manga Pages* analysis methods of analyzing gray scale values and deviation from them as a way to look at style is a breakthrough to a technique that may—will—need to have better problems to solve. But it is unparalleled in terms of computational analysis of aesthetic images and on that point alone it deserves to be taken seriously, even if its claims still outstrip its abilities.

Analyzing images, accessing images, reconstructing them and creating virtual environments for their use, their conservation and repair, and their manipulation—these are all familiar methods. Many are part of our daily business. The discourse of art history, its textual records and references, the books, journals, magazines, catalogues, and ephemeral of the field, also lends itself to analysis through new computational methodologies. The Getty Provenance index, a project with a long history, is a dramatic demonstration of the ways discourse analysis changes when data is digital.<sup>•</sup> The capacity for cross-referencing, searching, querying the Index shows the benefits of digitizing documents in a highly structured, well-formed approach to knowledge design. These are intellectual matters to which technical implementation is integral. A Global Provenance Index would be a remarkable research tool. Similarly, the opening of the Getty Portal for support of access to the corpus of art historical writings and primary documents has potential for similar benefit to the field. Expanding the notion of the canon, looking beyond fine art to material culture, and beyond western art to the legacy of world arts and cultures, poses other problems of logistics, languages, translation and scale. It also raises fascinating and useful theoretical questions about how we can show, expose, and examine incommensurable differences among ontologies and taxonomies, those knowledge structures and nomenclatures used for classification of objects that are part of the cultural record.<sup>••11</sup> Creating ways of accessing cultural objects from within different ontologies rather than aligning all world-views with a single perspective would be a radical proof of concept of post-colonial critiques of knowledge working in consort with digital methods. A multi-cultural AAT, a set of art historical vocabularies that could be faceted according to cultural points of view, would make a dramatic contribution to our understanding of the situated-ness of knowledge.

When virtual projects, simulations or reconstructions, or digital publications are made, they present an opportunity to include and present the evidence from which their representations or arguments are created. Lisa Snyder's World Columbian Exposition, created with the UCLA Urban Simulation Lab, contains the visual record of the materials on which she draws to extrapolate architectural details of her reconstruction.<sup>••12</sup> The materials provide another resource and record. Virtual images create other expectations, and in addition to the aforementioned Google art project, a host of born-virtual museums and displays have sprung into being. Alongside them, a newly emerging interest in augmented reality offers a glimpse into possibilities for using cultural legacy materials as

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<sup>9</sup> I've used the example of the Monet images in the Art Institute of Chicago catalogue sponsored by the Getty to stand in for this approach.

<sup>10</sup> <http://lab.softwarestudies.com/2008/09/cultural-analytics.html>

<sup>11</sup> Bibliographical Foundations of Chinese Classification Systems ([www.emeraldinsight.com](http://www.emeraldinsight.com))

<sup>12</sup> [http://www.ust.ucla.edu/ustweb/Projects/columbian\\_expo.htm](http://www.ust.ucla.edu/ustweb/Projects/columbian_expo.htm)

a way to read and understand our lived experience and environment. An image of the Thames in what-used-to-be-winter is not only useful for nostalgic purposes, but as a way of reading the shape of shorelines, patterns of urban development, and pictorial constructions of landscape as an active element of social and cultural life.<sup>•13</sup> How we learn to use these layerings in combination with interpretative materials remains to be seen, but the technology is already available.

Other experiments with imaging come from the work of artists. Jason Salavon and Idris Kahn have both created composite images, computationally arrived at aggregates of images that combine the information in a whole series of works into a single image. Salavon's images of *Playboy* nudes over four decades and wedding photos of heterosexual couples from a photographer's studio produce remarkable records and visual works.<sup>•14</sup> What can we learn from these and how will we process them? They are provocative, engaging, as is Kahn's composite of *Every Bern and Hilla Becher Photograph of Gable Sided Houses*.<sup>•15</sup> The images pose new questions about representation, imagery, art historical averages and standards, conventions and their persistence as a formative and formulaic agents of production.

Such formulae have historical and cultural dimensions, biases exposed in the process of making the composite that are less evident in viewing single images, or even multiples put on display. They have a productive relationship with other investigations of the historicity of vision. Like the expressed and explicit record produced by digital conservation attempts, images of past expressions of knowledge and conventions show us a similar set of conventional understandings. Take every image of a whale we can find in the print and painted record and average its features while also indexing them.<sup>•16</sup><sup>•17</sup> The composite, produced as a visualization but also an interface into that corpus, would be fascinating in ways that would push insights into the historical dimension of visual epistemology and representation. We might work in a similar manner with the history of spatial representation, as an inscription of the phenomenological experience of space rather than the recording of increasing knowledge of a space shown as known and mapped. Non-representational approaches to cartography, though increasing in geography, have not been embraced by digital humanists as a way to model the production of spatial experience rather than to represent it. The difference between these is crucial as the second assumes an a priori world of standard dimensions and metrics, observer independent and available to all individuals equally under any circumstances, but we know that spatial relations are heavily value-laden and produce a wide range of perceptual and cognitive effects. Modelling the expanding understanding of the New World from the art historical record, rather than mapping the art historical record onto the spatial coordinates of Google maps would be a radical experiment.

Among the methods in the digital toolkit beyond those named or suggested in the above discussion (whose underpinnings include classification systems, structured data, database design, visualization, network analysis, statistics, knowledge design, and information display) are techniques for the modelling of complex adaptive systems.<sup>•18</sup> Unlike other modelling systems, these are dynamic rather than static, and complex, non-linear, so their outcomes cannot be predicted, they have to be enacted. In a study of style trends, sales, reputation, influence, or other aspects of the social and cultural life of artifacts, modelling the social dynamics of the artwork-as-agent is a very important part of the work.

The forms and formats of digital scholarly publishing have yet to be worked out. What will they look like? How will they work and be organized? Can they permit multi-dimensional arguments (those meandering arrangements with many branchings and

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<sup>13</sup> <http://www.gravityroad.com/298/we-have-been-practising-this-routine-for-you/>

<sup>14</sup> [http://en.wikipedia.org/wiki/History\\_of\\_whaling](http://en.wikipedia.org/wiki/History_of_whaling)

recursive loops) on a slide table to be replicated in any publishable and stable form.●●●●●<sup>15</sup> How will born digital content be repurposed for print output?●<sup>16</sup> How will it be designed for multiple forms of output? How will collaborative work and versions be organized, credited, navigated, and displayed? One fact is certain. If we do not produce solutions from within the community, outside vendors will develop and promote their solutions.<sup>17</sup> Many will be ugly.●●● More will be ungainly, unsuited to tasks we most want to do.

This brings us back full circle to the role of the art historian in the dialogue with computational technologists, and to some of the very real logistical problems faced on a daily basis. Metadata standards and execution are only as good as their practitioners, and the interpretative and rhetorical force of metadata could and should be expanded through progressive bibliography and expansive records. Not only will new information be made available—about objects, provenance, and related objects—but the record itself will become, over time, another document in the history of intellectual trends in the field.

Digital technology has become ubiquitous. Its support functions have rendered its intellectual shape and underpinnings invisible. Every image found on the Web is found by a search engine working with multiple parameters, among them, metadata. But, in addition, the digital archive in the broadest publically accessible sense, provides a history of reception theory. Google “Mona Lisa” and the results are extraordinary.● The verbal commentary of centuries’ past, vanished into air in the galleries of the Louvre, is here presented as an expression of current, contemporary historical values and beliefs. If pejorative comments, irreverent gestures, or other mash-up transformations of Leonardo’s enigmatic figure are long gone, now a record of these attitudes of reception are fully present, available for study and discussion. That visual, material record becomes its own object of art historical study, a story of reception history expressed graphically.

Visual epistemology, graphical knowledge, art historical approaches combined with data analysis and computational techniques? These are all changing rapidly as fields and in what they can say to each other. Many logistical challenges face us. The need for publishing standards, new formats for scholarship, attitudes towards sustainability and preservation, the permissions and rights problems, and need for fully global portals and indexes – these are all real problems and issues. Driving the digital art history world, as well, are a set of concerns that are fully intellectual—how do digital engagements change our understanding of what an object *is* how it is made, how it is produced by and through its role as a transactional object in a community or among communities, how can we bring the refracting lenses of post-colonial, subaltern, queer, and other perspectives to bear on our images and models of visual knowledge, and how might faceted approaches to classification and nomenclature produce useful insights into art historical knowledge? The ethics and logistics of openness will need to be negotiated on a case by case basis, with respect for indigenous communities and their right to self-determination. And the many multi-modal, cross-platform opportunities for publication in a variety of formats from the same intellectual content will have to address the progressive and iterative nature of publication and scholarship as well. Our theoretical horizons are opening, shifting from static conceptions of an object to dynamic ones. Digital art history will be central to the unfolding of the theoretical and critical engagement with new modes of understanding what our objects of study are and how our approaches to them perform the assumptions of our time.

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<sup>15</sup> See the series of images taken from studies for my I.interpret project.

<sup>16</sup> <http://newecologyofthings.net/>

<sup>17</sup> Compare Social Book (<http://www.bookrix.com/socialbookinfo.html>), Homer Multitext (<http://www.homermultitext.org/>) and Arty iPad Apps (<http://www.artfund.org/news/2013/01/16/five-arty-ipad-apps>).