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## Developing a Digital Collaborative Research Environment: the Getty Scholars' Workspace<sup>®</sup>

Building on decades of experience in the digital realm, leveraging its unique capacity to develop new tools and methods for conducting, publishing, and sharing art-historical research, and recognizing the importance of digital tools for the future of art history, the Getty Research Institute (GRI) established a [Digital Art History<sup>1</sup>](#) (DAH) program in 2009. The newly-formed program at the GRI was fortunate to benefit from years of experience digitizing primary source materials, using principles of information science, and fostering a collaborative, interdisciplinary approach that has characterized the Getty since the early days of the Art History Information Program (AHIP), later re-named the [Getty Information Institute<sup>2</sup>](#) (GII); when the GII dissolved, its key staff with experience in the use of technology for art and cultural history transferred to the GRI. As the GRI's DAH program has evolved, its work has been increasingly informed by an emphasis on project planning and project management, an awareness of the issues and challenges surrounding publishing humanities resources online, and a prioritization of apparatuses for thinking critically about the intersections of the digital and the traditional in humanities scholarship.

One of the main responsibilities of the GRI's Digital Art History program is to deal with the transformation of information that occurs at the nexus between digital and analog scholarship and the new approaches to research methodology that this engenders. Often, our projects address the reality that *digitization does not equal access* and a good portion of our time is spent liaising with scholars from across the globe who are in search of best practices for digitization workflows, database creation and management, and digital publication. Many, if not most, art historians do not know the difference between a static HTML page and a dynamically-generated database search result, nor have they heard of things like metadata and controlled vocabularies. Because of this endemic knowledge gap, one of the questions we try to help art historians answer is *how much does a scholar need to know about technology and information science in order to complete a successful digital project?*

One of the benefits of meeting with scholars and their project teams to address this issue and others like it is the opportunity to share access to resources and to engage in scholarly discourse. Indeed, this is a key aspect of the GRI's [residential scholars program<sup>3</sup>](#). But what if researchers could do this from the comfort of their offices or homes, or from the corridors of the library stacks, no matter where they might be located? And what

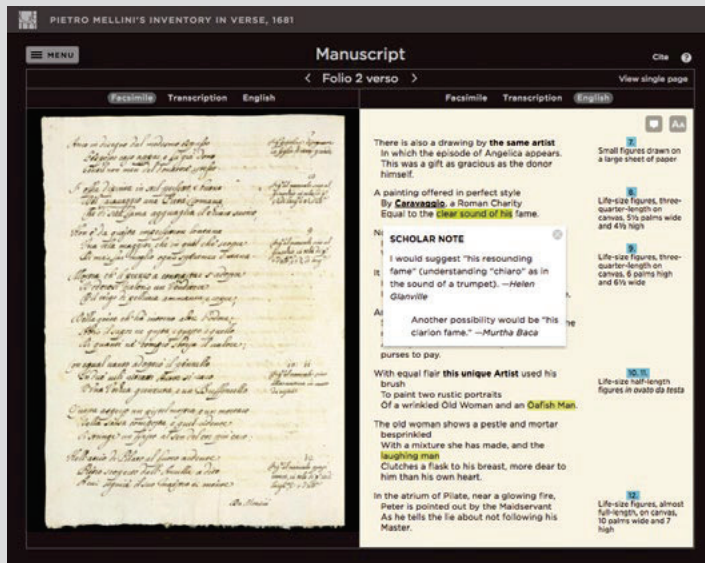


Fig. 1. *Digital Mellini*, Manuscript Comparison

if they could aggregate and record scholarly and technical exchanges in one place as they transpire? To facilitate precisely this type of scholarly discovery and exchange, the GRI's DAH team designed the [Getty Scholars' Workspace](#)<sup>4</sup>. An online environment for conducting collaborative humanities research projects and generating born-digital publications, the Getty Scholars' Workspace was developed to support the GRI Digital Art History program's first major research project that would result in a *born-digital* publication—a project that had the working title *Digital Mellini* before its publication (Fig. 1). Essentially, the Getty Scholars' Workspace digitizes, centralizes, and consolidates research assets and knowledge, thereby enhancing the traditional, analog scholars' workspace and its accoutrements—facilitating information sharing both among members of a research project team, and with anyone with Internet access. This first project (*Digital Mellini*) conducted in an early version of the Scholars' Workspace resulted in the GRI's first digital critical facsimile edition—*Pietro Mellini's Inventory in Verse, 1681*<sup>5</sup>, a digital publication that was produced with all of the scholarly and editorial rigor of any of the GRI's print publications; it has an ISBN number and MARC records in the GRI's own library catalogue and in WorldCat, among others. Not long after the *Digital Mellini* project began, our colleagues at the French National Institute for Art History ([INHA](#)<sup>6</sup>) also embarked on a research project using an early version of the workspace (prior to its



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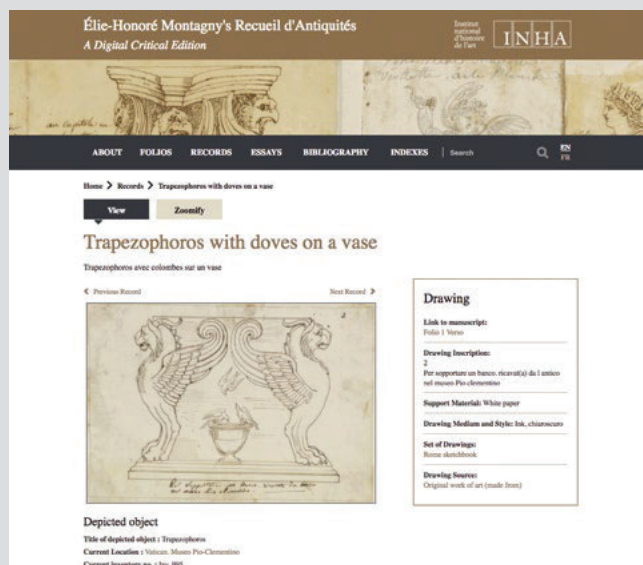


Fig. 2. *Digital Montagny*, Record View

public release in late 2015), which resulted in the INHA's first born-digital publication, *Élie-Honoré Montagny's Recueil d'Antiquités: A Digital Critical Edition* (Fig. 2)<sup>7</sup>.

As happens with many experimental and forward-thinking projects—especially those that rely on information technology—the Getty Scholars' Workspace was before its time in many ways. Thus, the highly innovative nature of this digital workspace is also responsible for some of its shortcomings, or rather, challenges. Many of the technologies and tools that were used to build the first version, which were popular when the project began several years ago—the selection of which was based on the core functionalities defined by the research team and communicated to the technical team—have since been surpassed or replaced by new technologies; and, inevitably, this trend of eventual obsolescence will continue. The tension between the constant and rapid changes in technology and the much slower moving world of traditional academia, especially in the humanities as opposed to the so-called hard sciences, played (and still plays) a significant role in the development of the Getty Scholars' Workspace. In many ways, this tension is something that the workspace was built to disrupt. While the Getty Scholars' Workspace is currently being used by institutions in different parts of the world to conduct art-historical research—exactly as it was intended to be—the lessons learned

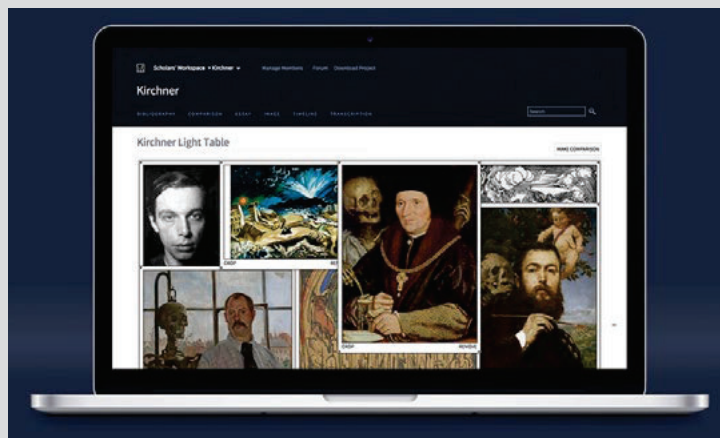


Fig. 3. Promotional Image for the Getty Scholars' Workspace®

from its design and implementation also have much to contribute to the field: questions about what happens when an analog workspace is replaced by a virtual one, about what practices are inherently easier—or more complicated—when they take place in a digital environment, and about what practices scholars truly desire to be technologized are rife with implications for the future of art history—and for scholarship in general.

The nature of the development of the Getty Scholars' Workspace is unique (Fig. 3); as we alluded to, while it was created to support the *Digital Mellini* project, it was also being developed and modified throughout the duration of that research project. What we learned during this *concurrent development* ultimately shaped the types of tools available in the Getty Scholars' Workspace, how project team members access those tools, and what kind of outcomes the workspace is best designed to create. The first version of the Getty Scholars' Workspace (version 1.0) was built as a tool for studying two primary source documents, which were the primary focus of the Mellini research project.

In addition, the composition of the *Digital Mellini* research team influenced one of the key qualities and *raison d'être* of the workspace. The principal investigators were Murtha Baca, head of the Digital Art History program at the GRI, and Nuria Rodríguez Ortega, chair of the department of art history at the University of Málaga, who discovered the unpublished 1681 Mellini manuscript in the GRI's vast Special Collections. The other two project researchers were Francesca Cappelletti of the University of Ferrara, a leading



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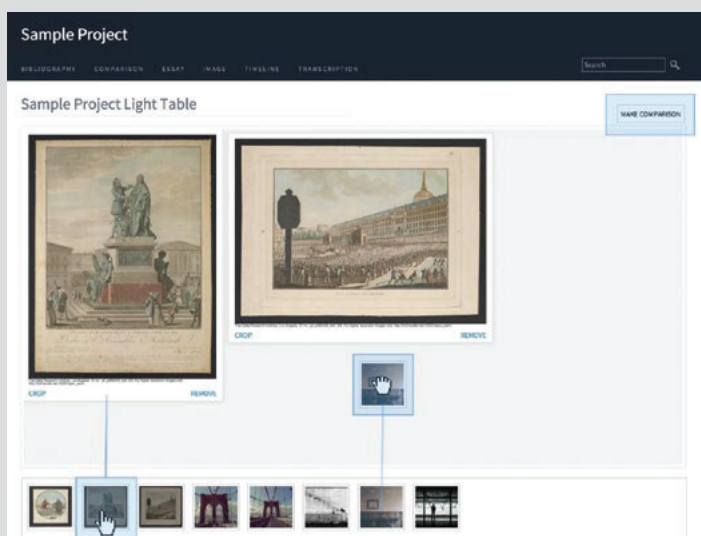


Fig. 4. Getty Scholars' Workspace<sup>®</sup> Comparison Tool, Light Table

expert on Roman Baroque collections and the works of Caravaggio and his followers, and Helen Glanville, an expert on translating historical documents from Italian to English who was a research associate at the Hamilton Kerr Institute of the University of Cambridge at the time. Since the four members of the scholarly research team lived and worked in different places—Los Angeles, Málaga, Ferrara, and Cambridge—it was essential to have a consolidated environment that was accessible and fully functional when used from anywhere in the world.

At that time, the Scholars' Workspace comprised only the transcription tool with annotation functionality, and the bibliography builder. It wasn't until 2015 that the Getty Scholars' Workspace version 1.0 was released with a full suite of tools including a bibliography tool, an essay tool, a comparison tool (Fig. 4), an image tool that includes a *light table*, a transcription tool, and a timeline tool. Today, the toolset and functionalities have significantly evolved; further development of the Getty Scholars' Workspace in 2016 resulted in the release of the [Getty Scholars' Workspace version 1.1](#),<sup>8</sup> which features improvements to the existing tools and functionalities, including a batch image uploader (Fig. 5) and an export tool (part of a publication pipeline, which we will address later in this article). While the tools in the Getty Scholars' Workspace—things like the annotation tool and light table tool—impress many established scholars (when the workspace was shown to a selection of GRI residential scholars, many of them stated *this is exactly what I want!*),

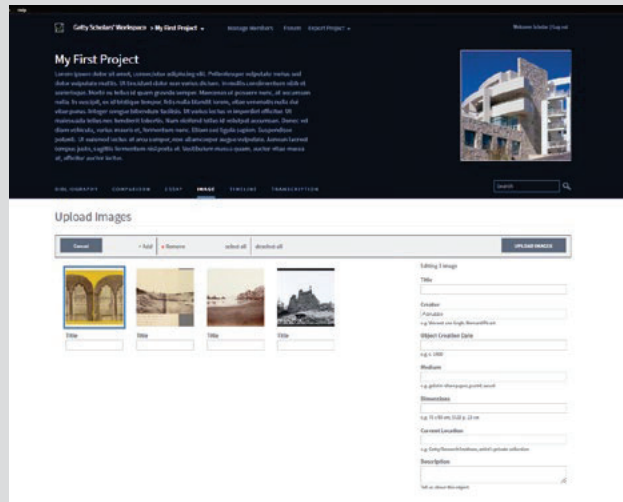


Fig. 5. Getty Scholars' Workspace® Image Tool, Batch Image Uploader

the most significant innovations of the Getty Scholars' Workspace are not technical in nature; rather, they are methodological and *philosophical*.

Ultimately, the Getty Scholars' Workspace is about collaboration, and the ability to accommodate in one place the multiple perspectives that characterize scholarly dialogue in the humanities and in the history of art, where there is rarely a single, unequivocal *right answer*—particularly for art that preceded the modern period. We believe that it is in these methodological, professional, *social*, and *psychological* spheres that the Getty Scholars' Workspace has the most to contribute to the field. Concepts to which many humanities scholars are still reticent or hostile, such as the idea of working *in data*, rather than *in documents* or of pulling back the *emerald curtain* behind which scholars and their research are so often hidden, are core tenets of the Getty Scholars' Workspace and its methodology, and are the reason for its design. In a split from the traditional academic world—where many professors are constrained to publish scholarly articles and monographs in print in order to advance their careers, and where information tends to be hoarded rather than freely shared—the Scholars' Workspace represents a shift in culture: a move away from the lone scholar toiling away and jealously hiding his or her research until the time of print publication, to collaborative researchers sharing their findings as well as the raw data and original documents with anyone with Internet access; away from developing expensive proprietary software, to developing and disseminating open-source software for anyone to use freely and adapt to their own research needs. Strong institutional support from entities like the Getty Research Institute—which expressly wants to change the way that art-historical research is conducted and published, and which has the ability to blaze new trails that some institutions, such as universities, are reluctant to embark upon—made it possible for us to experiment with new ways of researching, information sharing, and publishing.



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To produce a toolset that research teams could actually use with a minimum of training, or mental *re-training* (once the Scholars' Workspace software suite has been installed on a server by a technology specialist), that is easily navigable, intuitive, and that serves users' needs, it was essential for the development team to prioritize user experience (UX) design—an area where technology, business, and humanities research must come together, rather than collide. We had to go directly to users. Under the guidance of an experienced in-house UX designer, the team conducted user testing of version 1.0 of the Getty Scholars' Workspace, which consisted of one- to two-hour long interviews. Interview participants were prompted to use the Getty Scholars' Workspace as though they were conducting a project of their own, and were encouraged to voice their reactions to the workspace in as much detail as possible. What was learned from these interviews (what can be called *qualitative data*) shaped the types of improvements made in the new round of development that resulted in the Getty Scholars' Workspace version 1.1, which was released in December 2016. Two very specific needs emerged from these usability tests: users needed to view images in the light table tool more dynamically for it to be effective in making a real comparison; and they needed an easy way to get content out of the closed, password-protected environment of the Getty Scholars' Workspace and onto the web for public access. Additionally, they needed a more robust editing toolbar in the essay-building tool—something more akin to the type of word-processing software with which they were already familiar.

Three major lessons learned from the development of the Getty Scholars' Workspace (both version 1.0 and version 1.1) are: that the methodologies and requirements for developing software for and by humanists are unique; that developing user personas through user testing is essential for a good understanding of user needs and therefore for designing a usable interface; and that working in open content is challenging, but essential for the humanities. Both the Getty Scholars' Workspace open-source software toolset, and the digital publication that resulted from *Digital Mellini* are part of the J. Paul Getty Trust's larger [Open Content Program](#)<sup>9</sup>—a strategic, mission-driven effort to make as many of our resources freely available as possible, from digital still images to media files, from software (like the Getty Conservation Institute's [ARCHES](#)<sup>10</sup> project) to *big data* (like the Getty's electronic thesauri, which are freely available as [Linked Open Data sets](#)<sup>11</sup>), with no restrictions on use and re-use.



Because the Getty Scholars' Workspace software package is open-source, it is almost impossible to know how many instances currently exist. We are able to track clones and downloads on [GitHub](#)<sup>12</sup>, but that is only a partial indicator. At the time of this writing, the GRI's Digital Art History team is, however, currently working directly with two institutions, the British School at Rome (BSR) and the Avery Library at Columbia University, on two research projects being conducted in these institutions' own instances of the Scholars' Workspace. The BSR's research project centers on the notebooks of the English archaeologist and illustrator William Gell (1777–1836); the BSR research team members are using the transcription and image annotation functionalities to annotate the information-rich pages of Gell's notebooks, which are amalgams of sketches, notes, and other material that Gell recorded in the field. The project team at the Avery Library at Columbia University is using the Getty Scholars' Workspace primarily for its transcribing functionalities, but also for its ability to connect teams working remotely around the world; their *Digital Serlio project*<sup>13</sup> unites colleagues from an international collection of institutions and organizations (the Italian Academy at Columbia University, the University of Bologna, Columbia University's Graduate School of Architecture, Planning and Preservation (GSAPP), and the Ecolé nationale des Chartes in Paris) to transcribe, translate, annotate, and develop materials for a born-digital critical facsimile publication featuring visual and textual analysis of Sebastiano Serlio's *On Domestic Architecture* (*Tutte l'opere d'architettura, Libro VI*), currently held in the Avery's special collections.

Several years ago, a small team at the GRI set out to release a flexible, robust open-source electronic toolset, with accompanying technical and methodological documentation, to be shared with the international art history community. It was designed both as a challenge to traditional conceptions and practices of scholarship, and as a promise to the future of art-historical scholarship an embrace of digital technologies in a field that has been largely resistant to change. Today, a much larger team at the GRI oversees the development and maintenance of the Getty Scholars' Workspace. In response to the rapid development of technologies since its inception, the Scholars' Workspace has been updated and adapted, and as a result is being used globally. An innovative experiment in collaboration and accessibility, the Getty Scholars' Workspace has generated models for future toolsets and born-digital publications, and has elicited invaluable feedback from researchers in the fields of digital art history and the digital humanities. In the future, the GRI's Digital Art History program anticipates that the Scholars' Workspace will



continue to give rise to constantly evolving resources for art historians. With the advent of technical standards and tools such as IIIF<sup>14</sup> (the International Image Interoperability Framework) and the WC3 [Web Annotation Tool](#)<sup>15</sup>, the Getty Scholars' Workspace will continue to adapt and evolve—not only to the changing scholarly environment, but to the rapidly advancing technological field as well.

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