



# REIMAGINING THE CATALOGUE RAISONNÉ AS GENERATIVE DIGITAL SCHOLARSHIP

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**ABSTRACT** | Catalogues raisonnés have long determined the artistic relevance, authenticity, and market value of an artist's work. While catalogue raisonné publishers and authors have grappled for decades with the challenges and opportunities of digital formats, conventions around scholarly authority have set boundaries for exploring a more expansive view of the catalogue raisonné as generative digital scholarship. In the case of digital scholarly publishing, how might we consider analog and digital formats not as a convergence of but rather a divergence from a broader transformation of these important resources? This paper explores how taking the catalogue raisonné as generative digital scholarship imbues old structures with new meaning, wherein the chronology of historical events can change shape across time. Furthermore, by embedding processes of verifiability, evidence, and transparency—key principles for supporting a generative scholarly ecosystem—the digital catalogue raisonné allows for a diversity of voices and thoughts in dialogue. With revisionist histories and technical information on artists and artworks in continuous flux, the generative catalogue raisonné model is an opportunity to rethink the past by considering how to construct narratives in the historical present.

**KEYWORDS** | scholarly publishing, scholarly workflow, methodology, catalogue raisonné, digital transformation

Cover image: Alfred Stieglitz. *Georgia O'Keeffe*, 1918. Gelatin silver print, 8 7/8 x 6 3/4 inches. Georgia O'Keeffe Museum. Gift of The Georgia O'Keeffe Foundation.

## Introduction

The catalogue raisonné is one of art history's most orthodox research tools.<sup>1</sup> It is a comprehensive list of all known artworks by an artist that has maintained its commercial as well as cultural and intellectual influence. It is an impressive resource produced jointly by curators, scholars, conservators, and, in some cases, the artists themselves, with support from auction houses and collectors. It is an in-depth publication intended for future researchers and is referenced by appraisers, art dealers, collectors, curators, and scholars. The convergence of these multilayered art historical professions highlights the inherent value of the catalogue raisonné. Yet the moment it goes to print, a catalogue raisonné becomes out-of-date, calling into question its reliability over time.

The increased digitization of museums' and archival institutions' materials can address some of the concerns around out-of-date information published in printed catalogues raisonnés. Yet because catalogues raisonnés determine artistic relevance, authenticity, and market value, boundaries are ingrained within conventions of scholarly

authority. Because of this, the digital catalogue raisonné has yet to encompass all the affordances it has to offer while also maintaining its hierarchical position as a specialized and authoritative research tool. How might we consider analog and digital formats not as a convergence of, but rather as a divergence from a broader transformation of this important resource?

Modeling knowledge in a print catalogue raisonné requires the expertise of professionals in the discipline of art history. However, digital environments require perspectives from new actors, such as designers and technologists, that challenge the strict demarcations established by art history and its institutions, causing concern around these new front- and back-end contributors.<sup>2</sup> This demonstrates loyalty to the conventions of the printed book despite the proliferation of digital scholarly publications.

Furthermore, the conventions of art history and its practice often marginalize the vital contributions that the technical imagination plays in the development of knowledge production. An expanded skill set and shared authority across disciplines is the methodological intervention required to

develop a more innovative, networked, and generative research tool that provides the most up-to-date information and access to different levels of narrative and analysis on the life and works of an artist. This paper explores this important intersection of seemingly unrelated positions and the digital affordances that can evoke new interpretations in the history of art.

## A User-Centered Approach

Beginning in 2020, the Georgia O’Keeffe Museum sought to explore more expansive and dynamic research capabilities surrounding the work of its eponymous artist and her contexts in the development of modern art. For the museum and other arts-related professionals, the most trusted set of information—and a key starting point for research about the art and life of Georgia O’Keeffe—is Barbara Buhler Lynes’s *Georgia O’Keeffe: Catalogue Raisonné*, published more than twenty years ago by the National Gallery of Art and the Georgia O’Keeffe Foundation (which became part of the Georgia O’Keeffe Museum in 2006).<sup>3</sup> With enthusiasm regarding O’Keeffe continuously increasing (evidenced by the amount of new research, exhibitions, and conservation studies surrounding her work and life that has appeared over the past two decades), the museum sought a way to update this publication and make it more accessible.

Using this foundational publication as its starting point, the project team employed a user-centered approach to reimagine O’Keeffe’s catalogue raisonné as a digital resource to support new avenues of scholarly discovery. User-centered design focuses on putting users—in this case, catalogue raisonné users (e.g., appraisers, art dealers, collectors, conservators, curators, scholars)—at the center of the design process. The team sought to learn how people use catalogues raisonnés, how this type of resource is or is not currently meeting their needs, and which key barriers or opportunities of using digital catalogues raisonnés may exist. This paper is informed by this research, which consisted of one-on-one interviews, an online survey, workshops, presentations, and focus groups with a variety of stakeholders from 2020 to 2023.

## Catalogue Raisonné Users

At the risk of overgeneralizing, primary users of a catalogue raisonné can be broken down into two categories: those more focused on the authentication of works for market purposes (i.e., market users) and those more focused on performing research about the artist and artwork (i.e., researcher users). Additionally, there are

editorial and publishing manager users, as well as the artists themselves (in certain cases) and secondary audiences, such as educators and enthusiasts who are not considered in this article in depth. While a person can operate in multiple categories depending on the context, the primary needs of the market and researcher user differ subtly, but substantially, thus affecting the vision for the evolution of the catalogue raisonné. Both of these broad user audiences are important for the advancement of scholarship and interest surrounding an artist, and their efforts are symbiotic.

During user research, several interviewees asserted that the primary function of the catalogue raisonné is to authenticate, in support of the market, that an artwork is by an artist. This market group included art dealers, artists, auction houses, collectors, and others invested in the commercial value of a work. While museum professionals generally fall into the researcher category, in certain contexts—such as when they buy and sell art—they act as market users. Catalogues raisonnés support the market by providing a reference verifying the attribution of a work. However, this is high stakes because the decision to include a work in a catalogue raisonné can mean the difference of millions of dollars of investment—something that can and has put catalogue raisonné authors at risk for liability and legal action.<sup>4</sup> To protect the authentication and attribution process from undue influence and shield contributors and collectors from legal liability, the catalogue raisonné authoring process has generally followed strict codes of confidentiality. In addition to verification and authentication, market users also place value on a catalogue raisonné’s currency and accuracy of information, particularly surrounding provenance and exhibition history, which provides a verifiable chain of custody and enhances the commercial value of the work.

Researchers also care about the authentication and attribution of artwork, but more to establish the story behind a body of work than to demonstrate commercial value. This user group includes researchers and museum professionals who may be writing an article or a book, developing an exhibition, designing an art history course syllabus, producing a movie, etc. Researchers view the catalogue raisonné as the identity authority of a work—so two scholars know they are talking about the same object—and tend to use it as a touchpoint throughout the research process, whether looking for a theme, an artwork from a certain period, or variations throughout a body of work. Researchers describe their process as involving a lot of exploration and discovery. After using the catalogue raisonné as a starting point, the researcher may visit other sets of archival resources before returning to it to verify or compare a point. Easy access to the catalogue raisonné is important to researchers, particularly since print catalogues raisonnés can be expensive and too heavy to carry around. A focus group



participant reflected on how researchers use the catalogue raisonné to “read and sift through things, and then to start making connections between sources.”<sup>5</sup> Data currency and accuracy are important to researchers. However, since most catalogues raisonnés are not continuously updated, information pulled from the publication needs to be verified and brought up to date through other sources.

For both market and researcher users, the catalogue raisonné serves a vital role in establishing an artist and providing a foundation for further research and appreciation. The traditional publication fulfills a narrow set of needs in its current form and does a better job meeting the more straightforward needs of the market than those of the researchers who seek to understand the evolving state of scholarship.

## The Digital Catalogue Raisonné

“We need to get beyond the notion of the catalogue raisonné as a single, complete, definitive source where all the research is finished at the publication date. There’s always new information; the research is never done.”  
—Interviewee<sup>6</sup>

Digital publications are not new, and, according to the International Foundation for Art Research, there are at least 350 online catalogues raisonnés as of April 2023.<sup>7</sup> Debates and discussions about the opportunities and challenges of the digital format have been ongoing for decades. As the field has grappled with the adoption of the digital medium, advocates have underscored a change in format rather than a full transformation of the form. In 2016, David Grosz, then President of Artiflex Press (an online publisher that is now part of Cahiers d’Art Institute), emphasized that “the output would change but the method would not. Editors . . . prepare their catalogs in the same way scholars publish printed books.” Yet, in the same presentation, he said, “the results of our research are presented in a more flexible manner that is more responsive to the changing nature of the information we’re gathering.” Contrary to the first quote, Grosz’s second quote implies that a change in output does change the method as it is ongoing. Grosz went on to share a good metaphor for this difference: “A catalogue raisonné is understood as an object. The book itself a noun. With the advent of the digital catalogue in which the processes . . . can be easily updated, you can think of the digital catalogue raisonné as a verb. It’s a process not simply a product.”<sup>8</sup>

But, by releasing the publication without the intention of continuous updating, many digital catalogues raisonnés still function more like a product than a process. While this model does not benefit from many of the affordances

of the digital medium, it does solve several issues: (1) the catalogue is generally much more accessible than it would be in print; (2) the authority and currency (or lack thereof) is easily understood as the publication date for all records; (3) it provides more confidence as an unchanging citable source; and (4) it allows the catalogue raisonné to be a distinct, “finished” project with a publication date until the next edition is funded. Other types of digital catalogues raisonnés have leveraged the affordances of the digital with continuous updating more akin to a museum’s online collections database. While most examples of this type do not reveal to users when and how entries are modified, the systems themselves can track this information in logs, arguably demonstrating the already generative capability of digital catalogues raisonnés. Interviews with researchers highlight an appreciation of the up-to-date entries in this type of catalogue raisonné, but note that authority and trust are eroded by a lack of transparency regarding how and when changes are made.

## Imagining a More Generative Approach

“How do we distribute authority by a wider group of people providing evidence?”  
—Focus group participant<sup>9</sup>

Instead of comparing digital development methods with traditional print practices, perhaps the process of publication and access can be envisioned through a more transformative lens that addresses the evolution of art historical methodologies. In advocating a critical view of the art historical canon, art historian Nuria Rodríguez-Ortega reflects on the changing nature of assigning value in a globalized environment, highlighting “in particular, the need to bring out a critical awareness of the multiplicity and heterogeneity that define the processes of assigning value and meaning to objects on the basis of the variety of cultures, genders, races, and territories.”<sup>10</sup> In looking at a wider set of participants in value creation, Rodríguez-Ortega proposes a hybrid source of knowledge among domain experts and others “within an ‘interstitial’ context, that is, open spaces where institutions, social communities, individuals, and cultural and political agents interact, debate, and negotiate on how and where to identify shared cultural values and new forms of legitimacy.”<sup>11</sup>

How might a catalogue raisonné provide a platform for dynamic and generative scholarship with a shared authority that allows users to trace findings over time? Could this approach meet a wider set of user needs while also amplifying more voices and creating an ongoing scholarly dialogue? By offering greater transparency about the level of

certainty and presenting diverse research findings, could the catalogue raisonné better reflect the complexity and nuance of ongoing research? Could this transformation still meet the needs of market users regarding attribution and certainty?

If a catalogue raisonné expands its role as a generative research resource, it needs to address how to continue being a reliable and trusted source of information regarding an artist's body of work. For printed, single-author catalogues, a portion of that trust is due to the shared agreement around authority and trust in the author's scholarly rigor and reputation. Which works are included, which are not, and which dates, titles, or orientations are declared definitive is generated through years of investment and documentation by catalogue raisonné scholars. The authority of the author-scholar is supported by a combination of attributes, including their being acknowledged as the leading scholar on a particular artist, their years of research and viewing of the artworks, and, at times, the backing of a major museum that holds a significant portion of the artist's work. While research for a catalogue raisonné is a collaborative endeavor that includes art historians, collectors, conservators, and museum professionals, it is the lead author who makes the definitive call for what is published.

While some may argue that the very idea of continuous updating, uncertainty, and conflicting research is the antithesis of a catalogue raisonné, art historical practice is reconsidering ideas around authority and definitive answers to include a wider set of voices and viewpoints. The manner in which art and an artist's life are discussed evolves over time. Arguably, our lenses are constantly changing on how an artwork is examined and discussed. David Anfam, author of *Mark Rothko: The Works on Canvas—A Catalogue Raisonné*, describes two different kinds of catalogues raisonnés: one where hard facts are offered without uncertainty and another “where the hard facts start to interact with all sorts of factoids, possibilities, uncertainties, opinions, and even life experiences.”<sup>12</sup> He describes the latter as the “romantic catalogue raisonné,” explaining that “it should have extreme rigor” with “plenty of juicier and uncertain things around that backbone.”<sup>13</sup>

While much of a traditional catalogue raisonné could be considered fact-based (e.g., title, medium, dimension, and exhibition history), even these data points can change over time. In *Art History: Its Use and Abuse*, W. McAllister Johnson states, “Although cataloguing seems to deal only with objectified and normalized information, nowhere is a fact less factual than in titles, dates and dimensions.”<sup>14</sup> Expanding the catalogue raisonné to connect with a broader set of research and cataloging inputs can perhaps encourage ongoing scholarly dialogue surrounding an artist's body of work in multiple contexts. One of the chief advantages of a generative approach is that it can evolve as new information

is uncovered, new exhibitions take place, and new scholarship is produced. Art historian and director of the Belvedere Research Center, Christian Huemer, writes that “adding new literature and exhibition references may not involve too much effort. But how do you deal with controversial questions about authenticity or the interpretation of individual works? What about authorship in such a dynamic structure of fact and opinion?”<sup>15</sup>

Studies done on other forms of digital scholarly publications in art museums further illustrate the preferences of researcher audiences. Claire Quimby and Rockman Associates performed a usability study of scholarly digital collections catalogues, finding that audiences “liked that the catalogues could be updated as new scholarship is generated, and expressed the hope that museums would keep information current.”<sup>16</sup> The report also found that users wanted “tools that would allow researchers to add and curate their own information and engage in scholarly dialogue with one another” and “to see museums engage with each other in an online environment by linking their resources and building tools or publications that cross institutional boundaries.”<sup>17</sup>

Folklore scholar William Westerman describes how scholarly knowledge production is not distinguished from traditional and anecdotal knowledge by “a level of accuracy and truth or the professionally trained academic expertise involved in its production, but [by] the verifiability of the statements, the strength of the evidence, and the transparency with which such knowledge is generated.”<sup>18</sup> Verifiability, evidence, and transparency are key principles for supporting a generative scholarly ecosystem that allows for a diversity of voice and thought.

## Trust through Transparency

“When authority looks invisible, that's when it starts to feel more insidious. But when you can leave a breadcrumb trail, then I think that's a way to build trust.”  
—Focus group participant<sup>19</sup>

The catalogue raisonné as generative scholarship is a more complex network of information and sources than a traditional catalogue raisonné and therefore requires different considerations to support trust and reliability. A focus group participant wondered:

How do you help a reader understand that this has been verified by who, x, y, or z? Why does the field have a certain level of trust invested in that person? Is it because they represent the artist's estate and they've had the most opportunity to look at the works? Is it because of curatorial expertise? Is it the expertise of conservation or conservation science?<sup>20</sup>

These are valid questions that can be addressed through transparency regarding the process. Providing users with on-demand access to the breadcrumbs critical to the acceptance of a digital catalogue raisonné as generative scholarship can ease concern around authority and level of certainty. Whereas the traditional catalogue raisonné process has a high level of confidentiality and secrecy by design, the addition of critical metadata fosters trust while providing a level of transparency unavailable to researchers in conventional print catalogues raisonnés.

The Getty Foundation report, *Museum Catalogues in the Digital Age*, found that scholars required certain levels of transparency to trust an online catalogue. They wanted to be reassured that an online resource will persist into the future, “just as a book remains on the shelf,” and that when it is updated or changed, it “be indicated as clearly as possible.”<sup>21</sup> The report also found that researchers expected scholarly digital catalogues “derived from other sources to be footnoted, and content to be clearly organized and citable.”<sup>22</sup>

As Rodríguez-Ortega points out, including a wider set of diverse voices requires greater transparency and ethical practices around crediting ideas and decisions to allow for a dialogue.<sup>23</sup> To account for this, key considerations around transparency must include:

- Process and Decision-Making: What are the processes for including information, and who vetted the information?
- Degrees of Certainty: How certain is the assertion made by the contributor? What is that certainty based on?
- Revision Histories: What information has changed, why was it changed, when did it change, and who changed it?
- Source Citation and Attribution: What archival materials and conservation research studies support assertions made by contributors? Are there full citations to these sources so that a reader can evaluate them?

By embedding the review process more effectively, offering greater transparency about the level of certainty, and presenting differing viewpoints, a generative digital approach could better follow the complexity and nuance of research surrounding an artwork over time. This generative approach combined with a transparent process allows the market and researcher users to easily explore the available scholarship and consider a broader set of evidence from a wider set of perspectives. By providing access to these layers of information, a designed user experience (UX) will need to consider how to intuitively provide the level of information required for each use case. An effective UX could facilitate both browsing and deep diving, enabling users to navigate the artwork and the associated research in a nuanced and thoughtful manner.

## Decoupling Authentication and Generative Research Processes

Traditional catalogue raisonné research practices have intentionally employed secrecy so as to not be influenced by actors with vested interests and therefore provide a vital shield from external pressures, liability, and manipulation of those tasked with authenticating artworks. This concern generally centers around a work’s authentication, which, for the market, may be the most important role of the publication. In developing the catalogue raisonné as a generative research tool, there may need to be a decoupling of the process for authentication and that for the inclusion of ongoing research surrounding the work.

The generative approach advocates a transparency of process and the inclusion of multiple voices, implying a conflict between the market and researcher audiences’ needs. Perhaps the catalogue raisonné as generative digital scholarship requires two vetting workflows: one for the authentication of artworks and another for continuous updates and ongoing scholarly dialogue. While authentication processes are also evolving, particularly around material studies in conservation research, this method could be established with appropriate protections put in place.

Authentication processes have their own sets of potential technological evolutions. Some publishers and service providers have begun investigating blockchains and NFTs to certify artworks and verify property transfers. One expert interviewee exploring this idea shared: “I am thinking about what a defensible catalogue raisonné would be backed up by cryptographic signatures to increase levels of confidence. The blockchain gives a certain level of gravitas to the authentication experience.”<sup>24</sup> While a blockchain is not well suited to the flexibility for ongoing research, it is worth exploring for authentication and identity management use. Separately, a group of computer scientists published a paper that proposed using a digital classification model aided by artificial intelligence (AI) to address the authentication challenge.<sup>25</sup> Examples of how AI failed to identify an easily human identifiable copy of Raphael’s de Brécy Tondo show the limitations of current technology, though it is improving quickly.<sup>26</sup> Blockchain-based and AI solutions warrant full papers regarding their roles in the scholarly ecosystem and their large carbon footprints.

While rare, it should be noted that even work that is authenticated at one point can be reexamined and deauthenticated. This should be considered when designing the workflows and transparency around decision making. One interviewee recommended that all catalogues raisonnés

publish disclaimers vetted by legal experts, clearly putting forth that scholars have the right to change their minds based on the available evidence at any given time.

## Models and Inspiration for Generative Scholarship

The most obvious and well-known generative publication is Wikipedia, the free online encyclopedia written and maintained by a community of volunteers. Having launched more than twenty years ago, the community guidelines, editorial processes, revision management, and transparency around process have allowed an undertaking of this scale to become one of the most visited and cited resources across the internet. Though Wikipedia is not without bias problems, the model is worth reviewing for its use of the generative process, its transparent decision making methods, and its easily understood user experience. Community publishing platforms such as Wikipedia provide inspiration for how technology can be used to manage the key transparency considerations (i.e., process and decision making, degrees of certainty, revision histories, source citations) and governance.

In a study on Wikipedia contributors, learning scientists Hoda Baytiyeh and Jay Pfaffman looked at how the contributors became part of a collaborative learning community:

Participating in a community such as Wikipedia allows for development of two aspects of collaboration: peer interaction that enables negotiation and co-construction of artifacts, and expert-to-apprentice interaction which is known as “legitimate peripheral participation” that requires collaboration and mixing different types of expertise.<sup>27</sup>

Could this type of learning community be adapted to support a knowledge-building community around a generative catalogue raisonné?

The *Stanford Encyclopedia of Philosophy* (SEP) is an example of community publishing within academia. SEP organizes scholars of philosophy and related disciplines from around the world to create and maintain an up-to-date reference work.<sup>28</sup> Dating back to 1995—years before Wikipedia launched—SEP was designed so that each entry is maintained by domain experts. According to SEP’s about page, “All entries and substantive updates are refereed by the members of a distinguished editorial board before they are made public. Consequently, the dynamic reference work maintains academic standards while evolving and adapting

in response to new research.”<sup>29</sup> SEP provides a good model for the generative catalogue raisonné, having stable citations, revision histories, and scholarly provenance as well as being open access with a scholarly advisory board that includes subject experts.

The Wildenstein Plattner Institute (WPI) has significantly expanded the process of producing a catalogue raisonné with the *Tom Wesselmann Digital Corpus*.<sup>30</sup> While at the time of this writing the WPI is planning a separate catalogue raisonné, the current version of the corpus provides transparency into the work-in-progress. The resource includes all known Tom Wesselmann works and indicates the status of an artwork through several different cues: research surrounding a work is denoted by a section listing the date of examination; studied works feature color images while unexamined artworks are in black and white; and artworks verified for inclusion in the catalogue raisonné are clearly labeled “included” with a check box. Could a generative catalogue raisonné look more like a work-in-progress such as the *Tom Wesselmann Digital Corpus*?

A more experimental example is the prototype IAINBAXTER&raisonné, which comprises a “collection, virtual exhibition platform and research environment devoted to the Canadian conceptual artist Iain Baxter& that seeks to expand and transform the catalogue raisonné format into a collaborative scholarly communications and learning zone.”<sup>31</sup> Adam Lauder, lead developer of IAINBAXTER&raisonné, draws from concepts of early catalogues raisonnés, archiving practices, and media theory, stating that “invoking these historical prototypes serves a tactical purpose: they remind us that collaborative design methodologies and models of scholarly communication grounded in notions of ‘peer production’ and collaborative authoring are not without precedent.”<sup>32</sup> The IAINBAXTER&raisonné has playful elements for exploration such as a “campground,” but it is undermined by broken plug-ins and an inability to know when things have been updated. While the experimental approach is appreciated, this ultimately illustrates the difficulty in keeping a publication active and functioning when a key producer moves on.

## Linking Information Across the Internet

“With extensive information available across the internet, do we even need catalogues raisonnés anymore? Isn’t that linked data?”  
—Focus group participant<sup>33</sup>

As a digital resource, one key role of a generative catalogue raisonné is to aggregate information on an artist. The question then becomes, how does this differ from Google, which can bring to the fore all exhibitions, collecting organizations, and

more? Perhaps the answer lies in filtration. Interviews with researchers highlighted that it is increasingly difficult to piece together information from search engines since most results are commercial in nature, contain images without references, and generally make it difficult to trace ideas.

Unlike search engines, a catalogue raisonné performs the role of an identity manager or authority record for an artwork. By aggregating references to artworks and resources and linking to key archival collections, online scholarly publishers, relevant resources, and related records, a catalogue raisonné can be disambiguated from other like items. The Georgia O’Keeffe Museum has started to experiment with this idea by linking to artworks held in other collections within its Historic Exhibitions dataset and connecting them to references in digital publications.<sup>34</sup>

In a focus group, curators and researchers described a specific pattern of use that merges browsing and searching: Beginning with a specific search for an item, the user then moves forward and backward within the print catalogue raisonné, looking at the objects and context surrounding the object in question. As one participant explained, “I’m dipping in and leaving and coming back and leaving and coming back,” a sentiment other stakeholders shared.<sup>35</sup> Another participant commented:

I started thinking about it like when you’re browsing a shelf in a physical library. Sometimes you go to pick out a certain book, but then you see things next to it that catch your eye and all of a sudden, you’re going down a different path that leads you to where you wanted to go in a more efficient manner or might enlighten you, give you a new idea.<sup>36</sup>

Certainly, the internet itself is famous for drawing people down new areas of inquiry, or “rabbit holes.” Based on these findings, the generative catalogue raisonné should be designed to maintain and enhance this serendipity of discovery.

Quimby’s study of scholarly digital collections catalogues also found that focus groups considered “the ability to link the catalogues to content anywhere else on the web” to be an important advantage to online catalogues. “Although the catalogues reference work beyond their institutions, participants wanted to see these references take the form of live links so that researchers can continue to explore a topic beyond the boundaries of a single institution.”<sup>37</sup>

The generative digital catalogue raisonné could facilitate the researcher’s process of moving in and out of online sources and allow readers and contributors to utilize information across the internet to link to archival and conservation information. For example, important archival

collections surrounding Georgia O’Keeffe’s art and life reside in various repositories outside of the Georgia O’Keeffe Museum. The network of information strengthens as scholars link to archival evidence in these other repositories, creating a web of knowledge. This kind of work already happens within scholarly practices, but a generative catalogue raisonné can embed these relationships to allow future researchers to trace the breadcrumbs supporting assertions more easily.

## The Catalogue Raisonné as Generative Data

The generative catalogue raisonné can perhaps also provide ways for readers to extract information and images in multiple formats for their own further exploration. Several researchers brought up how they are creating working databases and lists as they perform their research. Data extraction may even make other forms of research using data visualization and artificial intelligence more easily achievable, leading to new findings and knowledge. The Hill Museum & Manuscript Library offers an interesting example of a data portal that allows curated datasets to be downloaded in comma delimited or JSON formats and is able to be used in other built-in collections tools.<sup>38</sup>

Focus group participants referenced various ways of looking at information within the catalogue raisonné, including data visualizations around time and geography. The ability to stack or compare timelines for different types of content was the most frequent request. Individuals wished to see the art chronologically and to compare that work within different contexts, such as events in the artist’s life, where the artist was living while producing a work, world events, exhibitions, and correspondence. Being able to filter a view for items created within a certain geographic area, or within a certain collection or exhibition, would also allow for easier and more complex research. Interactive data visualizations of timelines and maps could enhance ways of exploring the information in the catalogue raisonné. Other data points may be opportunities for visual exploration depending on the different features of an artist’s career.

Though AI uses did not come up in interviews, its emerging ubiquity and power should be considered in the design of the generative digital catalogue raisonné moving forward. AI could help reveal connections in the metadata and archival resources while also offering advanced computational image analysis. While AI holds great promise in aiding research processes, art historians Sonja Drimmer and Christopher J. Nygren caution that these tools could “reinscribe existing hierarchies rather than challenge them” due to biased data from which the models are trained.<sup>39</sup> In designing for transparency, algorithms would need to be tested for bias and explicitly shared for scholarly interrogation.



## Concluding Remarks

In this digital age, a print catalogue raisonné may be something of an anachronism, but it is still a critical and respected tool for art research. How might we begin to think about the catalogue raisonné anew and consider the digital a powerful tool that interacts with rather than mimics its partner in print? Instead of an evolution of format, what considerations allow the move to digital to be more of a transformation of process? William Westerman observes that “all knowledge is produced within the communication conventions of a particular community and disseminated in ways that are acceptable or trustworthy to a degree held customary by that same group.”<sup>40</sup> Therefore, a catalogue raisonné as generative digital scholarship needs to consider and put into place processes that the market and researcher user communities will find trustworthy.

This transformative view does not come without challenges, particularly given that the generative catalogue raisonné requires an ongoing commitment to the research and publishing processes, and technological and UX requirements. As the very nature of this generative research

tool does not rely on one author-scholar as the champion, who becomes that champion moving it forward into perpetuity? Does this proposed type of research tool need to be embedded into some sort of organization for sustainability—a museum, a foundation, a catalogue raisonné publisher, etc.?

With revisionist histories and technical information on artists and works of art in continuous flux, the generative catalogue raisonné is an opportunity to provide up-to-date information and rethink the past by considering how to construct narratives in the historical present. Research practitioners can reexamine historical evidence and technical information with dynamic tools and computational processes for deeper interactive and generative experiences, which allows for more efficient and creative approaches to exploring research questions. In this way, it is a tool for innovative historical thinking, providing, among many options, the opportunity to diverge from the dominance of chronology and explore nonlinear knowledge. Perhaps the greatest benefit would be to have the generative catalogue raisonné serve as a platform for interdisciplinary scholarly dialogue and debate that encourages new areas of research and new voices surrounding the art and life of an artist.

## NOTES

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<sup>2</sup> Christian Huemer highlights the inevitability of a wider range of expertise required in the production of digital catalogs raisonnés in his article “Das Werkverzeichnis im digitalen Zeitalter.” He contends that changed workflows for digital catalogs require individuals with broader skill sets maintain a close and consistent dialogue generally not as essential in the production of print catalogs. This dynamic exchange seeks to encompass all the affordances of digital catalogs and is a part of the promise and allure of digital scholarly publishing. Christian Huemer, “Das Werkverzeichnis im digitalen Zeitalter,” in *Handbuch Werkverzeichnis—Œuvrekatalog—Catalogue raisonné*, eds. Ingrid Pérez de Laborda, Aya Soika, and Eva Wiederkehr Sladeczek, (Germany: De Gruyter, 2023), 130.

<sup>3</sup> Barbara Buhler Lynes and Georgia O’Keeffe, *Georgia O’Keeffe: Catalogue Raisonné* (New Haven, CT: Yale University Press, 1999).

<sup>4</sup> An internet search yields many stories regarding the stakes and lawsuits surrounding artwork attribution, including

the case of a set of watercolors assumed to be by Georgia O’Keeffe but not authenticated as such when the Georgia O’Keeffe: Catalogue raisonné was published in 1999. See Jo Anne Lewis, “The Curious Case Of the Spurious O’Keeffes,” *Washington Post*, August 6, 2000, <https://www.washingtonpost.com/archive/lifestyle/2000/08/06/the-curious-case-of-the-spurious-okeeffes/f92feb73-0746-4621-89d5-7d179c6305fb>.

<sup>5</sup> Focus group interview with art research conservator, June 13, 2022.

<sup>6</sup> Individual interview with foundation digital program officer, March 1, 2022.

<sup>7</sup> “Catalogues Raisonnés,” International Foundations for Art Research (IFAR), accessed April 4, 2023, [https://www.ifar.org/cat\\_rais.php](https://www.ifar.org/cat_rais.php).

<sup>8</sup> David Grosz and Lucy Myers, “Session 6 – Publishing Options,” (symposium session, The Catalogue Raisonné in the 21st Century, London, November 18, 2016), <https://www.lundhumphries.com/pages/symposium-the-catalogue-raisonne-in-the-21st-century>.

<sup>9</sup> Focus group interview with museum publisher, December 15, 2022.

<sup>10</sup> Nuria Rodríguez-Ortega, “Canon, Value, and Cultural Heritage: New Processes of Assigning Value in the Postdigital Realm,” *Multimodal Technologies and Interaction 2*, no. 2 (2018): 25, <https://doi.org/10.3390/mti2020025>.

<sup>11</sup> Rodríguez-Ortega, “Canon, Value, and Cultural Heritage.”

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- <sup>14</sup> W. McAllister Johnson, *Art History: Its Use and Abuse* (Toronto: University of Toronto Press, 1988), 304.
- <sup>15</sup> Christian Huemer, "Das Werkverzeichnis im digitalen Zeitalter." In *Handbuch Werkverzeichnis—Œuvrekatalog—Catalogue raisonné*, eds. Ingrid Pérez de Laborda, Aya Soika, and Eva Wiederkehr Sladeczek, 127–38. Germany: De Gruyter, 2023. [Reference translated into English.]
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- <sup>17</sup> Quimby, *Digital Catalogues Study*.
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- <sup>19</sup> Focus group interview with art historian, December 13, 2022.
- <sup>20</sup> Focus group interview with museum curator, December 13, 2022.
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- <sup>22</sup> Getty Foundation, "Nine Lessons Learned."
- <sup>23</sup> Rodríguez-Ortega, "Canon, Value, and Cultural Heritage."
- <sup>24</sup> Interview with digital strategist and publisher, December 13, 2021.
- <sup>25</sup> Todd Dobbs, Aileen Benedict, and Zbigniew Ras, "Jumping into the artistic deep end: building the catalogue raisonné," *AI & Society* 37, no. 3 (2022): 873–89, <https://doi.org/10.1007/s00146-021-01370-2>.
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