Reimagining the Georgia O'Keeffe Catalogue Raisonné
White Paper
NEH Digital Humanities Advancement Grant (Level 1) 2021-2022
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NEH Digital Humanities Advancement Grant (Level 1) 2021-2022
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Funded by an NEH Digital Humanities Advancement Grant, the Georgia O'Keeffe Museum sought to explore how to facilitate research across the oeuvre of its eponymous artist, one of the most significant artists of the 20th century. The Georgia O'Keeffe: Catalogue Raisonné by Barbara Buhler Lynes was published in 1999 by the National Gallery of Art and the Georgia O'Keeffe Foundation. Despite being published more than 20 years ago, the Georgia O'Keeffe: Catalogue Raisonné remains the most trusted set of information and a key starting point for research about the art and life of Georgia O'Keeffe. Enthusiasm regarding Georgia O'Keeffe has continuously increased, evidenced by the amount of new research, exhibitions, and conservation studies surrounding her work and life in the past two decades. In this context, the Museum sought a way to leverage this publication and reimagine how it could more broadly facilitate research and scholarly dialogue.

The key principles around reimaging a new type of publication included:
• Design for broader audiences and uses
• Recognize research as living
• Celebrate diversity of scholarship
• Embed transparency and citable revisions
• Provide easy pathways to use the catalogue raisonné as data

The project design included three overarching components: art research and cataloguing, user-centered research, and data and technology feature specification.

Art Research and Cataloguing
A key aspect of this project was to understand and catalogue the current location and state of research of O'Keeffe's artworks. A grant-funded research associate investigated each of the more than two thousand known O'Keeffe artworks. Of particular interest was the number of objects in public collections with published records. The Georgia O'Keeffe Museum holds 47% of the artist's work. The census survey of O'Keeffe's works revealed that as of July 2022, 23% of the artist’s works was in 145 public collections and 25% in private collections. The research associate developed relationships with registrars of public collections to verify the state of research for those works and collect documentation regarding the state of provenance, exhibition, and publication histories. Certain data were entered into the collection management system, converted into linked data, and published through the new Historic Exhibitions feature on the Museum’s Collections Online browser. Publishing to Historic Exhibitions allows us to meet a key request from researchers to provide access to full checklists of exhibitions, which are difficult to reconstruct from the print catalogue raisonné. This also allowed us to work with partner institutions in creating object records that refer to online source records while also adding a layer of enrichment by connecting those artworks with other O'Keeffe works and archival materials related to the historic exhibitions.
User-Centered Research

With the foundational 1999 publication in hand, the O’Keeffe team aimed to explore the possibilities of facilitating research and scholarly dialogue through a user-centered approach. User-centered design focuses on putting users—in this case, users of this type of publication—at the center of the design process. The team sought to learn how people use catalogues raisonnés, how this type of resource is or isn’t currently meeting their needs, and key barriers/opportunities of using digital catalogues raisonnés. This research consisted of one-on-one interviews, an online survey, workshops, presentations, and focus groups with a variety of stakeholders from 2020 to 2022. This research intended to explore the blue-sky possibilities for expanding the definition and usefulness of a catalogue raisonné.

An initial survey yielded 112 respondents including categories of self-identification as 25% scholar/researcher, 21.4% librarian, 10.7% archivist, 8.9% curator, 7.1% auction house professional, 4.6% commercial gallery professional, and 4.5% faculty.

Key takeaways ranked important categories to consider in the design:

• Access
  • 87% Readily available
  • Searchable
• Reliable / Authoritative
  • 70% Ranked authority as highly important
  • Many mentioned this as a downfall to some digital catalogues raisonnés
• Usability
  • Ranked lower in importance, but cited as a key challenge in digital catalogues raisonnés

One-on-one interviews dove into deeper topics with a variety of stakeholders. Two workshops were held with conservation research professionals. A focus group was facilitated with art historians and another with museum publishers.

Features Exploration and Data Modeling

The O’Keeffe team worked closely with technology partners Design for Context, LLC and an audience strategist at HG&Co to translate user needs into feature specifications. Having worked with the Museum for over five years on its collections data initiatives, Design for Context provided guidance for extending the current linked open data collections infrastructure. A simultaneous project to publish Historic Exhibitions provided an iterative testing ground for modeling and publishing data from other public collections as well as those from private collections. Larger conceptual ideas were discussed around the boundaries of this type of publication and how the system would be maintained and kept up to date while more specific user stories emerged from the audience research.
Stakeholders reflected on basic needs, such as easy access at any time and the ability to search, sort, and browse with both precision and serendipity. More broadly, discussions leaned towards issues of authority, shifting methodologies in art history, trust, transparency, and sustainability. These larger issues are discussed in depth in the attached paper, “Reimagining the Catalogue Raisonné as Generative Digital Scholarship” by Liz Neely and Emily Leon.

**Next Steps**
An update of the 1999 print catalogue raisonné with all the objects extensively researched will take quite a while to catch up for the past twenty years. Additionally, the proposed generative approach in the accompanying paper requires a deep commitment to ongoing research and a redesign of the data infrastructure. While the user research supports these larger steps, first and foremost there is a desire for access in the near term.

Therefore, the team will approach the next steps to develop the Georgia O'Keeffe digital catalogue raisonné in phases. The first phase focuses on providing access to the artwork information researched during the NEH grant work by providing free access to all known objects in the artist’s catalogue raisonné as a user-friendly searchable browser with related images, exhibition histories, archival materials, and visual descriptions to increase accessibility for audiences with low or no vision. The resulting product will offer new ways to explore an artist’s full body of work through data visualization and other research tools. This phase can serve as a model in the field for developing sustainable update protocols for the aggregation of materials across organizations at scale served as a web browser tool for search and discovery and as linked data for computational uses.

Subsequent and perhaps overlapping phases will embark on more expansive and transformational research, processes, and workflows around updating research in a transparent and verifiable manner, and the design and implementation of a technical infrastructure to support the complexities of a catalogue raisonné as generative digital scholarship.
Appendix: Paper Manuscript submitted to the International Journal for Digital Art History

While this paper is a key component of this white paper, the authors are hopeful to have it published in a journal and therefore would like to save it for dissemination through that channel.

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Reimagining the Catalogue Raisonné as Generative Digital Scholarship

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Abstract
Catalogues raisonnés have long determined artistic relevancy, authenticity, and market value of an artist’s work. While the field of catalogue raisonné publishers and authors has grappled for decades with the challenges and opportunities of digital formats, conventions around scholarly authority set boundaries when exploring a more expansive view of the catalogue raisonné as generative digital scholarship. In the case of digital scholarly publishing, how might we consider the “hybridity” of analog and digital formats not as a convergence but rather a divergence towards a broader transformation of these important research resources? This paper explores how instead of taking cues from the analog print format, the catalogue raisonné as generative digital scholarship imbues old structures with new meaning, where 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 voice and thought in dialogue. With revisionist histories and technical information on artists and artworks in continuous flux, the generative catalogue raisonné 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

Introduction

The catalogue raisonné is one of art history’s most orthodox research tools. 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, and conservators with support from auction houses and collectors. It is an in-depth publication for future research 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 is 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 relevancy, authenticity, and market value, boundaries are ingrained within the conventions around scholarly authority. Because of this, the digital catalogue raisonné has yet to encompass all the affordances it has to offer while also maintaining its hierarchy as a specialized and authoritative research tool. How might we consider the “hybridity” of analog and digital formats not as a convergence, but rather as a divergence toward a broader transformation of this important research 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, which challenges the strict demarcations established by art history and its institutions—causing concern around these new front- and back-end contributors. 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 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 across the oeuvre of its eponymous artist, one of the most significant artists of the 20th century, renowned for her contribution to 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 the *Georgia O’Keeffe: Catalogue Raisonné* by Barbara Buhler Lynes, published more than 20 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). With enthusiasm regarding O’Keeffe continuously increasing, evidenced by the amount of new research, exhibitions, and conservation studies surrounding her work and life in 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: appraisers, art dealers, collectors, conservators, curators, scholars, etc.—at the center of the design process. The team sought to learn how people use catalogues raisonnés, how this type of resource is or isn’t currently meeting their needs, and key barriers/opportunities of using digital catalogues raisonnés. 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 2022.

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 (“market” users) and those more focused on performing research surrounding the artist and artwork (“researcher” users). Additionally, there are editorial and publishing manager users and secondary audiences such as educators and enthusiasts who were not looked at in depth for this exploration. While a person can exist in multiple categories depending on the context, the primary needs of the market and researcher users differ subtly, but substantially, thus impacting 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 that an artwork is by an artist in support of the market. This market group includes art dealers, 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 are market users. Catalogues raisonnés support the market by providing a reference to verify 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.iii 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 its 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.” Currency and accuracy of data 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.”
—Individual interview

Digital publications are not new and there are at least 350 online catalogues raisonnés as of April 2023, according to the International Foundation for Art Research, and 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, the second quote by Grosz implies that a change in output does indeed 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.”

But many current digital catalogues raisonnés still function more like a product than a process by releasing the publication without the intention of continuous updating. 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 digital with continuous updating more akin to a museum’s collections online 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 highlighted an appreciation of the up-to-date entries in this type of catalogue raisonné, but noted the authority and trust are eroded by a lack of transparency regarding how changes are made and when.

**Imagining a More Generative Approach**

“How do we distribute authority by a wider group of people providing evidence.”

—Focus group participant

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 reflected 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.”vi In looking at a wider set of participants in value creation, she proposes a hybrid source of knowledge among domain experts and other voices “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.”vii

How might a catalogue raisonné provide a platform for dynamic and generative scholarship with 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 the trust in the author’s scholarly rigor and reputation. What work is included, what is not, and what dates, titles, or orientation are declared to be definitive is generated through years of investment and
documentation by a catalogue raisonné scholar. The authority of the author-scholar is supported by a combination of attributes, including being acknowledged as the leading scholar on a particular artist, 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. Dr. 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; the other “where the hard facts start to interact with all sorts of factoids, possibilities, uncertainties, opinions, and even life experiences.” 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.”

While much of a traditional catalogue raisonné could be considered fact-based (i.e., title, medium, dimension, and exhibition history), even these data points change with differences in practice. 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.” Expanding the catalogue raisonné to connect with a broader set of research and cataloguing 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 over time as new information is uncovered, new exhibitions take place, and new scholarship is produced.

Studies done on other forms of digital scholarly publications in art museums further illustrate researcher audience preferences. 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.” 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.”

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." 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

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 expertise of conservation or conservation science?

These are valid questions that can be addressed through transparency around 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.” 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.”

As Nuria Rodríguez-Ortega points out, including a wider set of diverse voices requires greater transparency and ethical practices surrounding crediting ideas and decisions to allow for a dialogue. 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, and when did it change and by whom?

• 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 to not be influenced by actors with vested interests and provide a vital shield from external pressures, liability, and manipulation for those tasked with authenticating artworks. This concern generally centers around the authentication of the artwork, 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 between 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.” 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.xvii

While rare, it should be noted that even work that is authenticated at one point can be reexamined and de-authenticated. 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 20 years ago, the community guidelines, editorial processes, revision management, and transparency around process have allowed an undertaking at 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, 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 (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.xviii

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.xix Dating back to 1995, years before Wikipedia launched, the 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.”xx SEP
provides a good model for the generative catalogue raisonné, with stable citations, revision histories, scholarly provenance, and 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*. While at the time of this writing the WPI is planning a separate catalogue raisonné, the current *Corpus* provides transparency to 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&raisonnE, comprising 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.” Adam Lauder, lead developer of IAINBAXTER&raisonnE, 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.” The IAINBAXTER&raisonnE has playful elements for exploration such as a “campground,” but it is undermined by broken plug-ins, links to an unavailable blog, 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

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, etc.? Perhaps the answer lies in filtration. Interviews with researchers highlighted that it was increasingly difficult to piece together information from search engines since most results were commercial in nature, contained images without references, and generally made 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 could 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. xxiv

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. 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.

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.

Claire 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.” xxv

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. xxvi

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. xxvii 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." xxviii 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 the option, among many, to diverge from the dominance of chronology and explore non-linear 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.

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xxviii Westerman, “Epistemology, the Sociology of Knowledge, and the Wikipedia Userbox Controversy.”