

Understanding Virtual Reunification

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ABSTRACT

Virtual reunification is the strategy of reassembling physically dispersed heritage collections to produce a consolidated, digitized representation of scattered artifacts, literary and artistic works, and/or archival records of a single origin or common provenance. Scholars of digitization predict that interest in virtual reunification projects will continue to grow among heritage institutions, particularly in cases where dispersed collections present geographic, material, and political challenges that can more easily be overcome in the digital realm. This article highlights key characteristics of virtual reunification efforts taken from existing reunification projects and available literature on the topic, and it also offers ways to frame and approach virtual reunification. While available literature on virtual reunification focuses on specific project details and technical considerations, this article presents models that help to understand organizational and management challenges that virtual reunification planning may face. It concludes by identifying areas for further research in this emerging digital practice.

Over the past ten years, significant new modes of inquiry and publication have emerged through the creation of digital collections, particularly through possibilities afforded by advancements and efforts in digitization. As Clifford A. Lynch declares, “We can re-structure and re-create special collections along logical intellectual lines, and indeed create new ‘virtual’ special collections that facilitate new kinds of scholarly investigation” (2009, 5). One novel development has been the option to gather digital versions of physically dispersed objects, which may be described as “virtual reunification.” I define *virtual reunification* as the strategy of putting together physically dispersed heritage collections in order to produce a consolidated, digitized representation of scattered artifacts, literary and artistic works, and/or archival records attributable to a single origin or common provenance. Heritage and digitization scholars consider the process among the capacities made possible by recent advancements in digitization practices in the LAM (libraries, archives, and museums) sector. Among its positive effects, virtual reunification has the potential to vivify special collections research and scholarship.

This article is the first attempt to examine virtual reunification. Despite the excitement over what virtual reunification can deliver and what the resulting reintegrated product can achieve, no one has undertaken an overview or systematic investigation of relevant methods

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or ongoing projects. Therefore, this article highlights some key characteristics of virtual reunification efforts taken from existing reunification projects, as well as the growing literature on the topic, and it also offers ways to frame and approach virtual reunification. Considering the various resources and types of expertise involved in the process, I propose a way to account for how these elements converge and interact. This article concludes by identifying areas for further research in this emerging digital practice.

To develop this detailed overview of virtual reunification, I examined two main sources. First, I carefully reviewed the published literature on the subject. This body of work is limited in quantity and primarily consists of reports and project overviews, but nevertheless it offers insight into the emerging process. Second, I identified existing examples of virtual reunification projects, both completed and ongoing. These reunification projects vary in scope, size, and material for reintegration. The objects of reunification are diverse, ranging from the dispersed manuscripts of a renowned American writer, to archaeological artifacts taken from a Buddhist cave in China, to the sculptures of the Parthenon, to remnants of Danish galleries of the Renaissance. In my examination of literature and projects, I paid attention to ways that virtual reunification has been defined and characterized. I also examined the processes involved in online reunification and the resulting products of these efforts. This article aims to identify the key features of reunification, consolidate current understanding of this practice, and map out areas for further examination.

Definitions

It is helpful to begin with a definition of virtual reunification. While there is no available comprehensive definition of virtual reunification, some consensus is apparent in the term's usage in scholarly articles and published reports. Marilyn Deegan and Simon Tanner (2002), in their enumeration of the benefits of digitization, were among the first to offer a definition. They characterized "virtual reunification" as the possibility for "allowing dispersed collections to be brought together" (Deegan and Tanner 2002, 32). More recently, John Unsworth (2006) illustrated the process as a gathering together of "scattered archives," and he used the Walt Whitman Archive and the William Blake Archive as cases to illustrate this point. Both sources emphasize consolidation, textual analysis, and annotation. Anne Marie Austenfeld (2010) identified several characteristics of virtual reunification and prescribed the following goals: a virtual reunification project should seek to "make its content materials accessible to scholars as an identifiable collection or unit, to present them in a context that encourages thoughtful and constructive study of their origins, provenance, and cultural content, and to offer the various owner libraries a chance to work together while not feeling pressured to give up control of materials they have come to cherish as their own" (Austenfeld 2010, 146).

In practice, virtual reunification crosses diverse fields—from archaeology to literary studies (primarily in literary and critical editions), papyrology to medieval manuscripts, 3D imaging

technology to conservation—and refers to a variety of coordinated activities. Published works on online reunification mention a host of scholarly and technical endeavors: translation, textual analysis, and annotation; indexing and cataloging; scanning protocols and imaging standards; repatriation; and “cultural diplomacy” (Unsworth 2006; Greenfield 2007; Lynch 2008; Austenfeld 2010). Thus, virtual reunification encompasses the organization, production, and representation of dispersed cultural heritage collections kept in various locations in order to make these scattered collections accessible as a coherent collection or unit over the Internet.

Products of reunification have been described in a variety of ways, including “electronic editions,” “virtual archives,” “virtual museums,” “online exhibits,” and other variations on these terminologies. Not all projects that result in the virtual reunification of collections necessarily describe their output as “virtual reunification.” Thus, the defining characteristic of virtual reunification is the dispersed nature of the collection being assembled rather than the terminology used to refer to the resulting online product.

Although analog collections that have been historically dispersed are the objects of reunification (what some may call the “real” objects of reunification), it is the digital surrogates of analog objects that are actually being put together. Hence, the use of “virtual” appropriately captures at once the two most common uses of the word: (1) simulated and (2) in essence or effect (Shields 2003). Virtual reunification achieves the reintegration of dispersed collections using digital copies. In essence, then, it is not physical reunification of objects but rather a unification of surrogates.

Precursors to Virtual Reunification

The project of gathering and representing dispersed pieces of collections precedes the availability of digital technology. The assembly of dispersed artworks, archives, and manuscripts has counterparts in the analog world. Two major communities have a long tradition of compiling and organizing “complete” collections in order to transcend the limitations of both medium and distance. Humanist scholars have a notable tradition of compiling, editing, and interpreting comprehensive collections of works; likewise, heritage professions have made great strides to consolidate the representation and searchability of collections (e.g., cataloging and the creation of finding aids). These communities did not operate exclusively from each other. On the contrary, they operate in relation to one another to the extent of informing the practices and needs of one another as well as working collaboratively on specific publications.

Scholarly editors work typically within the canons of various humanistic disciplines. In music, several compilations of “complete works” or “monuments” of renowned artists and composers have been in publication since the mid-seventeenth century (Heyer 1980; Hill and Stephens 1997; Charles et al. 2012). Similarly, “catalogues raisonnés” are compilations of facsimile copies of works of art and have been widely used in art history (see <http://www.catalogueraisonne.org>). The literary world has “scholarly” or “critical” editions that provide

not only the complete text but also accompanying annotations and cross-references. More familiar to the archival community is the production of “historical” editions, which can be traced as early as the seventeenth century in the United States (Cox 2000).

Robert Barnet Riter (2011) designates the years between 1943 and 1970 as the modern period of historical editing, a moment of formalization and maturation. This period witnessed the publication of several notable editions, such as Julian P. Boyd’s *The Papers of Thomas Jefferson* (1950). That moment also saw sustained production of published or microfilmed historical documentary editions supported by the National Historical Publications and Records Commission (NHPRC 2004) for manuscripts deemed valuable “to further public understanding of American history, democracy and culture” (1).¹

Scholars of historical editions are examining the application of electronic and online publishing in the practice of documentary editing and publications management.² For instance, Kenneth M. Price (2009) reflects on the implications of the various terminologies (i.e., edition, project, database, archive, thematic research collections) that have been used over the years to describe a range of online and digital efforts involving large-scale literary texts. The field of critical editing is also developing ways to refine its established practices and endeavoring to harness the promise of electronic media as “tools that can efficiently manage large bodies of related literary and artistic objects” (McGann 2004, 145). Jerome McGann, general editor of the Rossetti Archive, regards virtual reunification as a means to deliver content online with a capacity to “overcome certain of the key limitations of critical editions organized in book form” (2004). Furthermore, he argues, “digital tools can execute many of the tasks of scholarly editing much better, much more thoroughly, and much more precisely than books can” (McGann 2004, 145).

Within the heritage field, the consolidation of indexes, finding aids, and catalogs has a long historical tradition that predates the now ubiquitous presence of digital and networked technologies. Early efforts to provide comprehensive representations of collections dispersed across various institutions came by way of printed catalogs, such as the *National Union Catalog* and the *National Union Catalog of Manuscript Collections* of the Library of Congress, as well as *A Guide to Archives and Manuscripts in the United States* of NHPRC. Daniel V. Pitti (1997), while tracing the evolution of the Encoded Archival Description (EAD), describes the development of electronic description with the capacity to represent dispersed and scattered collections kept in various institutions as an extension of these earlier, print-based access tools.

Jeannette Allis Bastian (2001) notes the potential role of descriptive standards and online access in the process, pointing out that “standards such as Encoded Archival Description now

1. The NHPRC published in 2000 a list of the publications it supported and endorsed over the years. See NHPRC, *A Descriptive List of Documentary Publications Supported and Endorsed by the National Historical Publications and Records Commission* (Washington, DC: NHPRC, 2000), <http://www.nara.gov/nara/nhprc/>.

2. Dow et al. 2001; Adorno 2004; Smith 2007; Prescott 2008.

offer the potential of virtually reuniting fragmented collections and relating distributed collections through the on-line linking of finding aids" (Bastian 2001, 114). The introduction of standards and rules for linking collections online was primarily seen for their potential to satisfy earlier desires for consolidating and aggregating dispersed collections.

Characteristics of Virtual Reunification

Proponents of virtual reunification acknowledge that "the creators of any virtual reunification project take upon themselves many of the same responsibilities as the editors of quality facsimile editions of texts or other artifacts, including the obligation to provide clear identification of the content, contextual information for further study of that content, and proper acknowledgment of the owners of the physical originals" (Austensfeld 2010, 146). Although following such scholarly traditions, virtual reunification exemplifies new modes of publication and collaboration. Digitizing artifacts and literary or artistic works and subsequently making them accessible over the Internet is becoming a platform for inter-institutional cooperative endeavors. These efforts, as noted in Laurie Lopatin's (2006) survey of digitization literature, demand various skills, including project management, funding, and selection and identification of materials for digitization, and Lopatin names legal concerns, metadata elements and creation, interoperability, and preservation as some of the most critical components of digitization.

It should be emphasized, however, that while digitization is an essential step to virtual reunification, not all digitization and online projects are "reunification" efforts. Certain characteristics distinguish virtual reunification from other digital projects. What sets virtual reunification apart, other than its reliance on digital surrogates and the affordances of digitized images, are several key features, such as the technical expertise required to accomplish the task, the processes involved, and the expected outcomes, all of which are discussed further below.

Proponents of virtual reunification projects assume that certain collections are best accessed or experienced in their entirety, that there is great value in experiencing the whole over its scattered parts (Shenton 2009 and Austensfeld 2010). Products of reunification, however, do not merely piece together fragments to make them whole again. Other web functionalities and features are afforded to online users. Among features available to digital online collections are hyperlinks, search and retrieval options, commentaries and annotations, metadata, descriptions of the item's physical condition, text editing, translations, and historical narratives. Thus, implementing a virtual reunification project requires knowledge and expertise beyond the context, content, and format of the collection. Pursuing this project also requires technical expertise in such diverse areas as conservation, digitization, web design, object description, metadata, and online curation. The process also requires equipment and tools, such as scanners for transforming, rendering, and visualizing analog materials into digital format. Furthermore, it involves making decisions involving quality and authenticity

and having the capacity to make appraisals in the context of online representation and interpretation.

Virtual reunification is more challenging than creating digital editions within one institution. The inter-institutional component of reunification requires coordination among institutions that may have uncommon digitization programs, priorities, and strategies. The diversity of repositories involved could also mean divergence in terms of collecting missions and policies for exhibiting, describing, and accessing collections. Virtual reunification thus requires complex negotiation among owning institutions, and it can only proceed through inter-institutional collaboration.

Successful virtual reunification projects typically benefit from multi-institutional funding and support and engage a variety of artifacts of various formats or genres, and they often involve several other heritage repositories and stakeholders. The availability of funding is an important aspect of reunification.

Reports examining virtual reunification emphasize its capacity for facilitating digital repatriation. For instance, Helen Shenton of the British Library, notes that virtual reunification projects “do not only enable the virtual reconstruction of cultural heritage but create a different digital entity; enable vastly enhanced general access; enable greatly enhanced revelation of both the intellectual and physical elements of collections; and engage with *cultural diplomacy*” (Shenton 2009 33–45; emphasis added).

Clifford A. Lynch (2002, 2009) projects that the growing trend toward virtual reunification will continue given its capacity to facilitate compromise and expediency for repositories unable or unwilling to de-acquisition or repatriate their piece of a larger inter-institutional collection. According to Austenfeld (2010), “The technology available in the 21st century offers an opportunity to diffuse the political tensions and logistical problems associated with dispersed collections by allowing us to reunify them virtually” (153). Modes of cooperation inspired in virtual reunification projects foreground technical solutions by promising the possibility of greater access to certain problematic collections. In some contexts, this move provides an unprecedented level of compromise around some of the most historically contentious issues of ownership and access to certain cultural objects (Greenfield 2007; Lynch 2008).

My analysis of literature reveals collaboration to be an important feature of virtual reunification. Collaboration occurs in various configurations. For example, some collaborations are intra-institutional, involving various units within an institution, including conservation, exhibition design, public outreach, and web design. Collaboration could also be discipline-oriented, such as that among art historians, writers, computer scientists, and Hebrew scholars. Another collaborative possibility could be field-specific, possibly including conservators, curators, archivists, and librarians, as well as literary editors. At times, collaboration takes on an international dimension because some dispersed collections cross national jurisdictions that require legal intervention.

In summary, collaborations for virtual reunification are geographic or regional, institutional, professional- or field-specific, or disciplinary. The products of cooperative endeavors under reunification are likewise varied, ranging from identification of common metadata elements, to design of web interfaces, to adoption of bibliographic description standards, to creation of digitization protocols.

A Matter of Goals, Processes, and Outcomes

Products of reunification do not simply reassemble various fragments to become whole again. This section outlines an overview of selected virtual reunification projects and the motivations that drive the digital (re)integration of cultural objects. It draws on a number of examples to present common rationales for virtual reunification that illustrate what the process can accomplish. The overview offers perspective on some of the more recent applications of virtual reunification and the corresponding ideas that inspire them. Although not exhaustive, these examples best represent and illustrate the key ideas that complicate contemporary virtual reunification projects. While each sample is identified under a certain category of purpose, it is not by any means exclusive to that category as one project can exemplify several objectives or concerns at once.

I chose projects based on two criteria. First, the project consolidates a dispersed collection using digital technology. Second, the effort has been recognized as a virtual reunification effort either by those involved in the project or by a third party through reports or publications. The projects discussed here are summarized in table 1.

These projects pursue virtual reunification for many reasons. I have identified seven major reasons: (1) transcend geographic dispersion for objects that cannot be physically reunited due to vague or contentious ownership concerns, (2) overcome physical limitations of formats and genre, (3) collaborate with institutions holding complementary collections, (4) show how dismantled collections or missing fragments of artifacts appeared in their entirety, (5) preserve or conserve original artifacts, (6) represent or exhibit collections in a new way by means of new and emerging technology, and, finally, and (7) open up opportunities for institutions to work collaboratively with researchers and scholars in making an online product.

At the outset, I wish to note that the motivating reasons enumerated and discussed below are features that are not necessarily results of virtual reunification alone. Virtual reunification relies on some of the notable characteristics and affordances of digitized images. For instance, the capacity to bridge geographic distance, overcome physical limitations, and conserve and preserve fragile items are benefits afforded by digitization in general.

Bringing Together Objects That Cannot Be Physically Reunited

Virtual reunification harnesses the capacity of digitized materials to be brought together to overcome geographic distance. Some heritage objects have a vague, if not contested, owner-

Table 1. Sample Virtual Reunification Projects and Their URLs

Dispersed Collection	Project Name	URL
Manuscripts from the Abbey Library of St. Gall	Codices Electronici Sangallenses (Digital Library of St. Gall), and later incorporated in e-codices: Virtual Manuscript Library of Switzerland	http://www.e-codices.unifr.ch
Leaves of the Codex Sinaiticus	Codex Sinaiticus	http://codexsinaiticus.org/en
Fragments of the Cairo Genizah	Penn/Cambridge Genizah Fragment Project	http://sceti.library.upenn.edu/genizah
Sculptures of the Parthenon	The Parthenon Sculpture Gallery	http://gl.ict.usc.edu/Data/parthenongallery/
Works of Walt Whitman	Walt Whitman Archive	http://www.whitmanarchive.org
Works of William Blake	William Blake Archive	http://www.blakearchive.org/blake
Works of Dante Gabriel Rossetti	Dante Gabriel Rossetti Hypermedia Archive	http://www.rossettiarchive.org
Works of Mark Twain	Mark Twain Papers and Project	http://www.marktwainproject.org
Works of Jane Austen	Jane Austen's Fiction Manuscripts Digital Edition	http://www.janeausten.ac.uk/index.html
Quaker Antislavery Papers	Quakers and Slavery Project	http://trilogy.brynmawr.edu/speccoll/quakersandslavery/about/index.php
King Frederik III Danish Renaissance collection	The King's Kunstkammer	http://www.kunstkammer.dk/GBindex.shtml
Manuscripts and artifacts from Dunhuang	International Dunhuang Project: The Silk Road Online	http://idp.bl.uk
William Muschenheim architectural pictures and drawings	Muschenheim Digital Archive	http://bentley.umich.edu/exhibits/musch/index.html

ship status so that physical reunification under present political or economic conditions is almost impossible. This is complicated by jurisdictional uncertainties and divergent institutional values and priorities. In this case, virtual reunification is implemented as a way to transcend the challenges of separation and distance for objects that cannot be physically reintegrated.

The scattered manuscripts of the Abbey Library of St. Gall offer a prominent example of virtual reunification dealing with vague ownership status. This project is part of the larger e-codices: Virtual Manuscript Library of Switzerland (<http://www.e-codices.unifr.ch>), an effort to build a virtual library of medieval and early modern manuscripts held in Swiss repositories.

The project, formerly known as the *Codices Electronici Sangallenses* (Digital library of St. Gall), attempts to reunite scattered parts of several medieval manuscripts formerly held by the Abbey Library of St. Gall, a Swiss scriptorium whose collection found its way into various European institutions through numerous relocations, theft, and looting. Through a unified web portal hosted by the Université de Fribourg, the former collection of manuscripts is now represented in a unified, but virtual, collection. In addition to reuniting the manuscripts, descriptive metadata are provided in German, French, Italian, and English.

Another example is the reassembly of the oldest copy of the New Testament Bible, the *Codex Sinaiticus* (<http://codexsinaiticus.org/en>), whose leaves are divided up in four repositories, the Leipzig University Library, the British Library, the St. Catherine's Monastery in Mount Sinai, and the National Library of Russia. Efforts to reunify the manuscript began in March 2005, and since July 2009, all extant copies of the various sections of *Codex Sinaiticus* have been available online. In addition to high-resolution copies of all extant pages of the codex, the site provides transcriptions of its handwritten texts. Visitors to the site are also provided with descriptions of the manuscript's physical condition. A team of researchers is currently compiling and studying archival sources in order to provide a fuller narrative of the manuscript's story of dispersion.

These examples—the manuscripts of the Abbey Library of St. Gall and the *Codex Sinaiticus*—illustrate how virtual reunification can bring together dispersed objects. The compromise avoids conflicts over ownership and control over the physical objects. Whether or not virtual reunification satisfies the need of rightful owners of these collections to gain control over these contested heritage objects is an interesting matter to pursue in future studies.

Physical Challenges of Assembling the Original Material

In other cases, virtual reunification responds to challenges posed by the nature and the various components of the objects themselves. Varying formats and diverse genres pose difficulty in assembling dispersed works into one physical product. The William Blake Archive (<http://www.blakearchive.org/blake>) and the Dante Gabriel Rossetti Hypermedia Archive (<http://www.rossettiarchive.org>) are reunification efforts that respond to these challenges. Both projects focus on renowned auteurs, William Blake (printmaker, engraver, and painter) and Dante Gabriel Rossetti (poet, illustrator, painter, and translator), who in their lifetimes produced several artistic and literary works of various formats and genre (Jones 2006). Both authored diverse multimedia creations, so virtual reunification has been useful to assemble their complete works through a unified, hyperlinked resource.

Texts that appeared in several editions, with each published version bearing some form of revision, present another set of challenges to contemporary editors of critical editions. The Walt Whitman Archive (<http://www.whitmanarchive.org>) aims to gather all editions and versions of the works of the famous American writer. Institutions find the hyperlinking capabilities of

the online environment to be the most ideal platform for representing works of Whitman (Folsom 2007). The online platform also enables users and editors of the site to link up related or contextual archives or documentation to certain works. A letter or a diary entry may provide a pivotal insight into the understanding of a novel or a verse. The Mark Twain Papers and Project of the Bancroft Library at University of California, Berkeley, aims ultimately to “produce a digital critical edition, fully annotated, of everything Mark Twain wrote” (<http://www.marktwainproject.org>). Similarly, the Jane Austen’s Fiction Manuscripts Digital Edition (<http://www.janeausten.ac.uk/index.html>) gathers together around 1,100 pages of fiction written in the writer’s own hand (Sutherland and Pierazzo 2012). In these projects, networked technology is used to provide transcriptions, sometimes even translations, of written texts alongside images of the actual document. The online archives of Blake, Whitman, Rossetti, Twain, and Austen all illustrate how virtual reunification is used to manage the geographic dispersion of artistic works of a single individual while overcoming the limitations inherent in their physical makeup, such as diversity of formats and genre.

Combining Complementary Collections

Some virtual reunification projects are simply driven by institutional desires to share complementary collections. Haverford College and Swarthmore College, for instance, are currently coordinating to produce their combined holdings of Quaker antislavery collections in the Quakers and Slavery Project (<http://trilogy.brynmawr.edu/speccoll/quakersandslavery/about/index.php>). The Muschenheim Digital Archive project initiated by the Bentley Historical Library at the University of Michigan brings together selected pictures and drawings of the architectural work of William Muschenheim (<http://bentley.umich.edu/exhibits/musch/index.html>). Not all virtual reunification projects aim to deliver comprehensiveness. Sometimes institutions endeavor to present only representative items from participating repositories for purposes of consistency, focus, and expediency. In this project, select representative samples of Muschenheim’s works found at Bentley Library and the Avery Architectural and Fine Arts Library at Columbia University were assembled through an interactive website.

“Visualizing” the Whole

Virtual reunification can also be used to create visualizations that illustrate particular aspects or foster analysis of a given collection. For example, a visualization may show how long-lost or dispersed collections may have appeared at a time when they were intact. The King’s Kunstkammer recreates the dismantled Danish Renaissance collection of King Frederik III, whose artifacts were subsequently distributed to various public museums in Denmark early in the 1800s (<http://www.kunstkammer.dk/GBindex.shtml>). This project offers the public a way to appreciate collections that were once together but were later distributed to various other museums (Gundestrup and Wanning 2004). The International Dunhuang Project: The Silk

Road Online is an international collaboration to provide all manuscripts, paintings, textiles, and artifacts from Dunhuang and archaeological sites along the Eastern Silk Road (<http://www.idp.bl.uk>). Aside from presenting identifiable objects, the project also attempts to reconstruct the missing parts of certain artifacts (Lutz and Weintke 1999). Virtually reconstructing missing pieces of a sculpture can help those trying to locate the institutions where the missing fragments might be found. Visual renderings of archaeological items help institutions verify their provenance by consulting registries of looted artifacts.

Sculptures taken from the Parthenon, one of the most prominent remnant sites of antiquity, have also been subject to virtual reconstruction (http://gl.ict.usc.edu/Data/parthenon_gallery/). Several sculptures of the Parthenon are now held by the British Museum, the Musée du Louvre in Paris, the Vatican Museums in Rome, the National Museum of Denmark, the Kunsthistorisches Museum in Vienna, the University Museum of Würzburg, and the Glyptothek in Munich. Some sculptures remained in Greece and are now kept by the Acropolis Museum in Athens. The British Museum, holding a significant portion of the sculptures known as the “Elgin Marbles,” has recently been at the center of the debates over the marbles’ rightful ownership and the legality of their removal from Greece and their subsequent acquisition into the museum (Hamilakis 1999; Hitchens 2008). See, for instance, <http://www.elginism.com>.

The Parthenon Sculpture Gallery, initiated by the Institute for Creative Technologies of the University of Southern California, involved the scanning of all available casts of the Parthenon sculptures from the Basel Skulpturhalle in Switzerland, which houses a unique collection of plaster casts of all the known Parthenon sculptures (Stumpf et al. 2003). Notably, in spite of the availability of virtually reunified sculptures, the Greek government and its supporters continue to lobby for the return of the originals to Greece. In fact, activists advocating for the repatriation of the marbles sometimes use the virtually reunified images of the Parthenon to push the idea of a “complete” or reunified look in their campaigns to repatriate and physically reunify the marbles.

Experiment with New Technologies

Virtual reunification also presents the opportunity for institutions to experiment with new and emerging technology to provide novel ways of representing objects. For instance, creators of the Whitman Archive cited technology and “new developments in electronic editing and the new digital archives that were only then beginning to appear” in the early 1990s as the main impetus of the project (<http://whitmanarchive.org/about/history.html>). Another example of virtual reunification that was largely motivated by technological experimentation is the Parthenon Sculpture Gallery. Produced under the auspices of the University of Southern California’s Institute for Creative Technologies (ICT) graphics lab, the online sculpture gallery demonstrates the capability of the 3D scanning technology that ICT had previously developed.

In both examples, the desire to explore innovative ways of presenting humanistic works was among the impetus for virtual reunification.

While having the capacity to deliver artifacts in their entirety, virtual reunification also provides enhanced access by adding other services and functionalities. Shenton (2009) suggests that virtual reunifications provide “a new digital resource with features that the original could not itself provide” (34). Manuscript librarians Shenton (2009) and Austenfeld (2010) are in agreement that virtually reunified collections are best considered as new entities.

Preservation and Conservation

Preservation and conservation concerns are also motivating factors for reunification. In some projects dealing with fragile manuscripts, conservation work was deemed a precondition for digitization (Henschke 2007; Shenton 2009). In her discussion of the reunification of the *Codex Sinaiticus*, Shenton (2009) identifies several “conservation dividends” resulting from the reunification of the oldest existing biblical manuscript. These include the reduction of usage of the original and facilitating a common condition documentation strategy. In addition, she also noted how digitization could enhance the capacity for viewing surface conditions of the manuscript, thus aiding condition assessment. In this instance, the goal of representing the *Codex* in its entirety also resulted in more coordinated preservation actions among participating repositories.

Opportunities and Necessities of Collaboration

Collaboration is cited as an important feature of virtual reunification.³ There are two motivating factors why institutions collaborate. The first is a response to funding and public pressures to engage in cooperative endeavors with similar repositories. Hence, proponents of reunification are motivated by both desire and expectation to collaborate with other institutions. Institutional participation in virtual reunification is an opportunity for heritage institutions to fulfill this sense of obligation. Second, collaboration is necessary for virtual reunification to succeed. Institutions with complementary collections find ways to coordinate, create partnerships, pull their resources together, and create common work flows in order for their collections to be reunited. In virtual reunification, collaboration is both an opportunity and a necessity.

Collaboration in the context of virtual reunification can be geographic or regional, institutional, professional- or field-specific, and disciplinary. The product of cooperative endeavors under reunification can be as varied as the types of objects that are targeted for reunification. Collaboration may involve people external to the organization or another peer institu-

3. Henschke 2007; Lynch 2008; Shenton 2009; Austenfeld 2010.

tion. It can also be intra-institutional, for instance, between an institution's conservation, exhibition design, public outreach, and web design departments. Collaboration may also be disciplinary-oriented, such as that among art historians, writers, computer scientists, and Hebrew scholars. Other collaborative formations could be across functional roles, for example, those of conservators, curators, archivists, librarians, and literary editors. At times, collaboration takes on an international dimension as some collections are scattered across national jurisdictions and will require legal intervention.

The Penn/Cambridge *Genizah* Fragment Project (<http://sceti.library.upenn.edu/genizah>) is a collaborative endeavor that aims to ultimately reunite about 220,000 fragments of various documents recovered from the Cairo *Genizah*. A *genizah* is a site for the storage of texts that mention the name of God, which in the Jewish tradition cannot be destroyed. The fragments are currently found across seventeen repositories in the United States, the United Kingdom, France, Russia, Austria, Hungary, Ukraine, and Israel. Selected fragments digitized from the combined holdings of the University of Pennsylvania, Cambridge University, and the Jewish Theological Seminary of America libraries are now available online. Metadata experts, manuscripts curators, web designers, and Hebrew scholars were involved in this reunification project.

Several experts from various domains were likewise involved in the reunification of the manuscripts of the Abbey Library of St. Gall, the Whitman Archive, and the Cairo *Genizah* projects. All three projects consist of scholars, manuscripts librarians, conservators, and digitization experts. The same holds true in varying degrees for other reunification efforts cited above.

Collaboration happens at a variety of levels, contexts, or settings. As suggested earlier, the convergence of several entities and types of expertise presents a critical factor in the success of virtual reunification. Thus, collaboration could be at the level of several owning institutions forming an inter-institutional collaboration to coordinate the digitization and bibliographic description, like the Penn/Cambridge *Genizah* Fragment Project. It could also be several institutions with complementary expertise and resources converging to produce a unified online product. Such is the case of the Mark Twain Papers and Project, which involves the Bancroft Library of the University of California, Berkeley; the California Digital Library; and the University of California Press (Holz 2006).

As the foregoing discussion shows, virtual reunification serves various purposes and objectives. These include bridging geographic distance, augmenting the limitations of formats and genres, combining complementary collections, "visualizing" the whole, conserving and preserving original artifacts, experimenting with new and emerging technologies, and promoting collaboration. Table 2 summarizes the variety of motivations exemplified by the projects discussed here.

Attributes of successful virtual reunification projects can be gleaned from available projects and literature. The overview of these projects indicates that their success is measured by

Table 2. Common Characteristics of Selected Virtual Reunification Projects

Project Name	Motivations						
	Bridge Geographic Distance	Limitations of Analog Formats and Genres	Combine Complementary Collections	"Visualize" the Whole	Preservation/Conservation	Experiment with New Technologies	Collaboration
Codex Sinaiticus	x				x	x	x
Dante Gabriel Rossetti Hypermedia Archive		x				x	x
e-codices: Virtual Manuscript Library of Switzerland	x				x	x	x
International Dunhuang Project: The Silk Road Online	x			x			x
Jane Austen's Fiction Manuscripts Digital Edition		x				x	x
Mark Twain Papers and Project		x	x			x	x
Muschenheim Digital Archive Penn/Cambridge Genizah		x	x			x	x
Fragment Project	x				x	x	x
Quakers and Slavery Project			x				
The King's Kunstkammer	x					x	
The Parthenon Sculpture Gallery	x						
Walt Whitman Archive		x		x		x	x
William Blake Archive		x				x	x

whether or not they achieved the goal of creating a common online product that integrates or showcases a dispersed collection. Successful reunification efforts share in common the following attributes: institutional collaboration, development of common procedural protocols, adherence to established technical standards, funding support, scholarly and research demands, and involvement of various experts.⁴

Limitations of the Literature

The literature regarding virtual reunification leaves a number of issues unaddressed or undertheorized. Specifically, the focus has been on certain genres of materials and endeavors for virtual reunification projects, none of which have focused on images or photographic materials. In addition, barriers are posed by the sociotechnical challenges of standards and processes as well as the stakeholders driving development. Finally, collaboration efforts between large institutions are difficult to manage and require significant planning and management of collaboration. This section identifies major gaps in virtual reunification literature that need further examination.

Focus on Textual and Historical Collections

The majority of extant virtual reunification projects, or planned projects, focus on literary works, manuscripts, works of art, and archaeological artifacts. There is no significant literature that deals with photographic, moving image, or sound collections and their needs in virtual reunification projects. Audiovisual materials have not been explored in terms of their potential or challenges in virtual reunification projects.

For example, there is ongoing discussion about the challenges of describing photographs in archival collections.⁵ Still, no model exists for the virtual reunification of a photographic collection. Thus, the challenges posed by representation, metadata requirements, and description for archival images present significant issues for a prospective virtual reunification project dealing with this type of collection.

Most virtual reunification projects involve historical collections. Approaches to the process as it may be applied to current or contemporary works remain underexplored. Copyright presents a major issue in this vein. Obtaining reproduction rights over collections that are on loan as well as those governed by old contracts that did not specifically cover digitization rights can complicate any online representation efforts. Copyright issues can potentially have an impact on virtual reunification, especially considering that many collaborations reach across international jurisdictions.

4. Stumpfel et al. 2003; Jones 2006; Henschke 2007; Dogan and Scharsky 2008; Austenfeld 2010; Eide 2010.

5. Bartlett 1996; Schwartz 2000; Mifflin 2007; Schlak 2008; Benson 2009; Stewart 2010.

Problematic Nature of “Return”

Various reports and projects tout the possibility of “returning” materials to source communities. Lynch (2008), Shenton (2009), and Austenfeld (2010) argue that virtual reunification can offer the unique affordance to return complex and fragile objects more easily through digital surrogates than does physical repatriation. Virtual repatriation projects tend toward archaeological artifacts, medieval manuscripts, or literary works that may have particular sets of concerns and questions. On the other hand, indigenous collections may present quite different challenges for repatriation. There are studies concerning community outreach and physical repatriation as well as the impact of these practices on institutional and community relations.⁶ In recent years, authors note digitization of indigenous artifacts and online representation of indigenous cultures, but the promise of “return” for such collections remains an open question.⁷ In some cases, digital tools have opened up the possibility to offer alternative and thicker descriptions that can be added into museum registries (Shilton and Srinivasan 2007; Srinivasan et al. 2009), but even networked museum catalogs often remain closed to the public.

Digital repatriation is a relatively recent possibility, but the practice has gained some attention from scholars, owning institutions, and source communities (Smith 2008; Henessy 2009). While members of the LAM community have begun to address the issues surrounding repatriation practices (Boserup 2005; Lyndon 2010; Christen 2011), more work needs to be done to understand the effectiveness of return via digital methods. In particular, the field needs more empirical research on the adoption of virtual reunification as a strategy for repatriation, including the logistics and negotiations of contacting and working with source communities.

Emphasizing Successes over Barriers and Challenges

Reports cited in this article emphasize positive outcomes, or successes, of virtual reunification projects. Less attention is given to the dynamic elements of the process, factors that threaten projects, and avenues that may have proved unfruitful. Certain barriers and challenges can influence the shape and outcomes of virtual reunification collaboration and, therefore, project reports could benefit from closer scrutiny of how threats are handled or resolved among key decision makers. While authors writing on virtual reunification mention the value of concession, negotiation, and diplomacy, they offer very little discussion on how compromises are reached.⁸

6. Barkan 2002; Peers and Brown 2003; Dudding 2005; Brown and Peers (with members of the Kainai Nation) 2006.

7. Roy and Christal 2002; Naka et al. 2008; Pilcher and Vermeylen 2008; Vermeylen and Pilcher 2009; Dawson, Levy, and Lyons 2011.

8. Lerner and Jerchow 2006; Lynch 2008; Shenton 2009; Austenfeld 2010.

Open Distinctions between Drivers and Technical Challenges

Researcher-Driven versus Institutionally-Driven Projects

Given their technical requirements and systems-based nature, virtual reunification projects would seem to be more institutionally driven than projects in the realm of print editions. Previous projects and analyses, however, have not paid close attention to possible distinctions between researcher-driven and institutionally-driven concerns in virtual reunification projects. While the role of an editor of a critical edition, for example, has typically been filled by a scholar whose work specifically focused on a body of work by a particular writer, the editorial role in digital scholarship has been more diffused, and often it has included technical responsibility (McGann 2004; Folsom 2007). In a print-based project, access models typically emphasize provision of copies and reproduction rights, whereas in digital projects, concerns regarding digital infrastructural support, knowledge of metadata standards, and long-term preservation and hosting are required. Virtual reunification projects have seemingly featured more active and engaged participation from institutions. Thus, virtual reunification projects may be seen to require more institutional efforts than previous editorial projects. For example, editors of the Mark Twain Project Online describe learning the challenges posed by learning the “mysteries of electronic editing,” and they ultimately (after experimenting with near-obsolete SGML in 2002) collaborated with the California Digital Library to supply the “expertise of a kind the very experienced editors could not hope to acquire for themselves” around text-encoding, database construction and architecture, and digital preservation.⁹ The literature, however, does not make clear distinctions between institutional and researcher roles, and it is not clear how these changes may affect project outcomes and products.

The Role of Standards

Standards often influence work-flow processes, but their relationship to product outcomes is unclear. It is difficult to tell how much the process of assembling and building virtual reunification projects relies on standards. Many project reports discuss, for example, how metadata standards were adopted, adapted, and ultimately appropriated. In the Penn/Cambridge Genizah Fragment Project, a great deal of effort was put into adapting and appropriating the MARC 21 Format for Bibliographic Data for cataloging and metadata consolidation (Lerner and Jerchow 2006). It is not clear, however, how much the content and nature of the *genizah* fragments determined this choice or if it was due to the participation of numerous librarians in the project. One wonders, for example, how the outcomes might have differed if the project proponents had chosen to implement archival description standards such as ISAD(G) or DACS using MARC 21. Even though virtual reunification projects have relied on

9. See “Mark Twain Project: Project History,” <http://www.marktwainproject.org/about-projecthistory.shtml>; and “Mark Twain Project: The making of MTPO,” <http://www.marktwainproject.org/about-makingMTPO.shtml>.

the implementation and appropriation of existing standards in relation to the objects of reunification, target outcomes, and processes involved, no clear model of how to conceptualize these relationships has been proposed.

Lack of Attention to Inter-institutional Collaboration

One major insight of the literature surveyed is that virtual reunification often involves the collaboration of institutions with varied sizes, expertise, resources, and priorities. Yet few studies give a detailed perspective on how the collaborations of institutions involved play out in a given project. There is significant literature regarding how the structure and dynamics of inter-institutional collaboration can lend insight into inter-organizational cooperation (Wood and Gray 1991; Huxham and Vangen 2000; Thompson and Perry 2006).

Particularly relevant to virtual reunification are the determinants of inter-organizational cooperation (Schermerhorn 1975; Ebrahim 2004), such as the dynamics of power and influence in the negotiation of goals, values, and missions (Philips, Lawrence, and Hardy 2000), challenges of communication and coordination (Kern and Kersten 2007; Lee 2007), trust in alliances and cooperation (Luo and Deng 2009), appropriation and use of technology (Kern and Kersten 2007; Olson et al. 2008), sharing of resources and expertise (Longoria 2005), and the physical proximity of institutions involved (Knoben and Oerlemans 2006; Olson et al. 2008). Here, distinctions are made among various configurations of cooperative endeavors (Adobor 2006). Partnerships, consortia, mergers, and federations are distinguished in terms of the level of interactions they require from participants and the structure necessary for them to work together (Wang 2002). Furthermore, the impact of collaboration on institutional dynamics and structures also requires further attention. These areas are rarely mentioned in the current reunification literature. More detailed connection with inter-institutional collaboration literature could help shed light on the contingencies involved in conducting an inter-organizational virtual reunification project.¹⁰ This is important because successful reunification rests on effective collaboration, clear goals, well-defined purpose and audience, and technical wherewithal to gather, consolidate, and represent various pieces of dispersed collections.

Another underexplored implication of virtual reunification is the absence of discussion around how virtual reunification might be situated within long-standing calls for collaboration among members of the LAM community.¹¹ The topic of convergence of the LAMs has a long history, reaching its peak in the past twenty years with the introduction of information in the electronic form (Hedstrom and King 2007). For instance, W. Boyd Rayward (1998, 207) argues that “the distinctions between all of these apparently different types of institutions eventually will make little sense” in what he calls the “electronification” of many of

10. Powell and Dimaggio 1991; Lawrence, Hardy, and Philips 2002; Hardy, Philips, and Lawrence 2003; Williams 2005; Shrum, Genuth, and Chompalov 2007.

11. Kalfatovic et al. 2008; Zorich, Waibel, and Erway 2008; Trant 2009; Hunter, Legg, and Oehlerts 2010.

the materials held by traditional repositories. There has been sustained and growing expectation among various sectors for the LAM institutions to find ways to aggregate overlap and coordinate digitization efforts and meet user needs (Marty 2010). The impact of virtual reunification on the continuing convergence of institutional roles and identities remains unexplored.

Toward an Integrated Model of Virtual Reunification

In examining the projects and the literature cited above, I developed a unified model for examining virtual reunification. The final model is based on three constituent models, each of which presents a way of looking at virtual reunification interpolated from different ways of looking at virtual reunification projects noted in previous literature and projects discussed above. I conclude by reconciling these varied ways of looking at virtual reunification into a consolidated model.

The first framework, the Linear and Goal-Oriented Approach, looks at reunification as a linear process that begins with a dispersed collection and ends with a digitally reunified product. The second framework, the Product and Process Approach, considers virtual reunification as the iterative interaction between process and product. This model considers how preconceived ideas of a final product will likely influence the steps to pursue in order to achieve online reunification. However, it also acknowledges that the same process can also shape the product in profound ways. This approach focuses on the negotiation between two interacting elements, process and product, that mutually shape the outcomes of virtual reunification. The third model, the Stakeholder Approach, identifies the various parties involved in the process of reunification. Virtual reunification involves intra- and inter-institutional negotiations, funding support, multidisciplinary expertise, and user demands. The process might be best seen as a common convergence point for all stakeholder groups.

Virtual Reunification: A Linear and Goal-Oriented Approach

Virtual reunification can be modeled as a linear process of accomplishing targets and goals. Figure 1 illustrates this approach. The model identifies the main elements involved in accomplishing the ultimate goal of providing complete digital versions of artifacts. The process begins with the identification of collections and ends with the production of complete and comprehensive collections online. In this setup, virtual reunification (B) is seen as the necessary process for scattered collections (A) to become digitally reunified (C).

Given its emphasis on the linear movement of accomplishing institutional targets and goals, this approach assumes that the process of reunification follows a simple and straightforward path. The strength of this model is its focus on virtual reunification as the necessary step for achieving consolidation and reunification of scattered or fragmented collections. The model is particularly useful if the aim is to discover the goals and objectives that motivate institutions to pursue virtual reunification. Furthermore, the approach also seeks to account

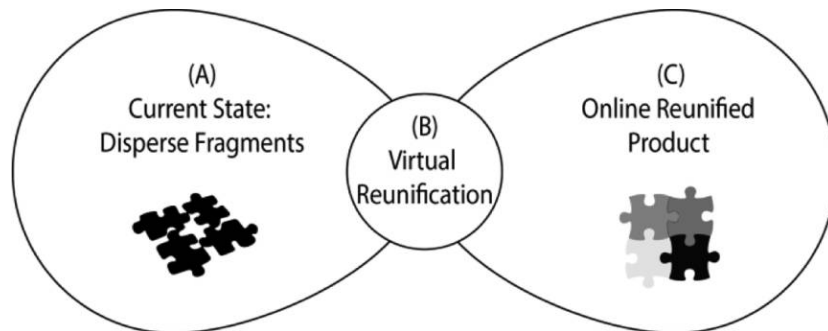


Figure 1. Virtual reunification: a linear and goal-oriented approach

for the state of the collection prior to reunification and relate this with visions of the final reunified product.

Using this perspective, however, can also be limiting. For instance, the model does not account for the iterative and interactive nature of reunification decision making. As indicated in the analysis of sample projects and the literature on reunification, the collaborative nature of reunification requires negotiation and coordination among institutions with divergent priorities and strategies. In this regard, capturing how key conflicts and barriers are resolved can provide crucial insight into the reunification decision-making process. Second, it tends to place the entire reunification process into a black box. Thus, the model fails to account for the contingencies and challenges of virtual reunification.

Virtual Reunification: A Process and Product Approach

A second model for virtual reunification is as both (1) *process* and (2) *product* and the interaction between these two elements. This approach assumes that certain preconceived notions of a final product will likely dictate the steps necessary to accomplish reunification. The illustration of figure 2 emphasizes the link between procedural steps and rules in the creation of a reunified product.

In this model, the products of reunification are shaped by the means of their creation. Thus, both process and product of virtual reunification are in a mutually constitutive relationship. The ongoing efforts to reunite the Cairo *genizah* through the Penn/Cambridge *Genizah* Fragment Project illustrate how virtual reunification can be understood as a product-process relationship. The project presents a web-based image database that scholars can use to locate or identify the individual fragments of the dispersed collection. This online database allows for searches by title, author, language, physical characteristics, subject, and bibliographic history. One functionality enables side-by-side comparison of various digitized frag-

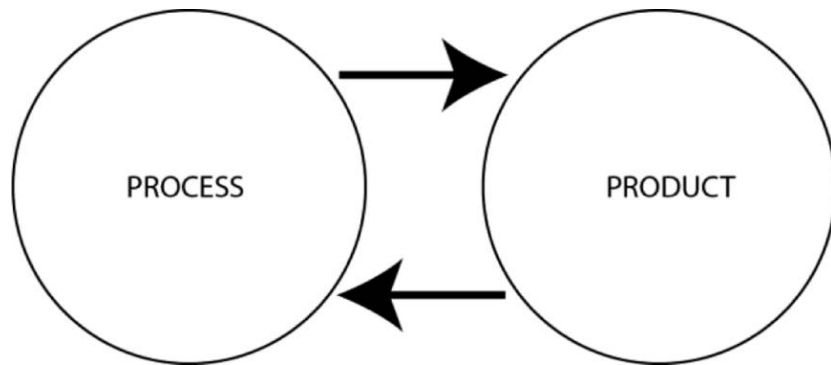


Figure 2. Virtual reunification: a process and product approach

ments. The integration of the digitized fragments and all the functionalities provided on the site are all products of virtual reunification. The product is designed specifically to address the expectations of scholars and owning institutions of having a unified bibliographic control of the dispersed fragments (Lerner and Jerchow 2006).

Much effort in the *genizah* reunification went toward ensuring that cataloging and descriptive practices are performed consistently across all participating repositories. Consequently, this required the adoption and development of descriptive protocols, metadata, and the uniform use of controlled vocabulary for both physical condition assessment and bibliographic description. The digitization for reunification as well as the production of this website necessitated expertise not only in digitization technology and web interface design but also bibliographic description and metadata standards and knowledge of Hebrew and Jewish manuscripts. Reunification of the Cairo *genizah* meant producing a web-based image database, and this in turn required consideration of descriptive protocols and involvement of expertise from various domains. Because of the expected output, the process coalesced around bibliographic description. The focus on cataloging and description also dictated which expertise to involve and what services and functionalities to include on the website (Lerner and Jerchow 2006). Highlighting the iterative relationship between process and product helps reveal key decisions made and the expertise involved in the reunification of the *genizah*.

An appreciation of the process-product relationship is important since both processes and outcomes involved in reunification vary. While almost all reunification projects seem to aspire for comprehensiveness and completeness, what a reunified product does, the services it provides, and how it looks depend on a variety of factors as previously indicated. The model is helpful in accounting for the process of creating an online reunified product. However, it leaves out the actors who determine the procedures to pursue, the priorities to emphasize, and the product to create.

Virtual Reunification: A Stakeholders Approach

A third approach to examine virtual reunification is to identify the various stakeholders involved in development, design, and implementation. Negotiations and decisions also shape virtual reunification processes and outcomes. In my review of the literature and sample projects, I indicated the importance of leveraging scholarly demands or research requirements with technological capacity on the one hand and institutional limitations and expertise on the other hand. I also noted how funding requirements can dictate reunification outcomes and goals. Figure 3 illustrates virtual reunification as a result of the convergence of various groups with overlapping interests: heritage professionals and administrators in owning institutions, sources and providers of funding support, researchers and scholars who access and use the dispersed collection, and experts who provide technical know-how in the interpretation of content or design of online platforms.

The Rosetti Archive, for instance, can illustrate the involvement of several stakeholders in a successful virtual reunification project. The project received support from several sources: main sponsorship came from the Institute for Advanced Technology in the Humanities (IATH) at the University of Virginia; partial funding came from the National Endowment for the Humanities and the Andrew W. Mellon Foundation; equipment grants came from IBM Corporation; and research associated with the project was supported by grants from the University of Virginia, the University of Michigan Press, and the J. Paul Getty Trust. From its inception in 1992 to its completion in 2008, the project involved several editors, research assistants, programmers and analysts, and external consultants. While the project gathered items from several institutions and private collections, the reunification of these items did not emanate from any of the owning persons or institutions. Third party researchers, housed by a university research unit (IATH), facilitated production of the Rosetti Archive.

Virtual Reunification: A Consolidated Approach

Each model presented above emphasizes different aspects of virtual reunification: the stakeholders involved, the iterative relationship between process and product, and the goals and objectives that motivate institutions to pursue reunification. I combine these models (fig. 4) to illustrate a comprehensive view of these three approaches in examining virtual reunification. The resulting consolidated model goes beyond the three individual approaches and situates each approach in dynamic relationship with the others. Taken together, these models represent a more holistic perspective of virtual reunification.

The consolidated model helps to more fully understand virtual reunification. As noted above, the three constituent models each distill particular viewpoints apparent in the literature and existing projects. Each of those viewpoints, however, presents situated perspectives and partial illustrations. Stakeholders are an important component of virtual reunification, but an exclusive focus on this component alone will not provide insight on the overlapping in-

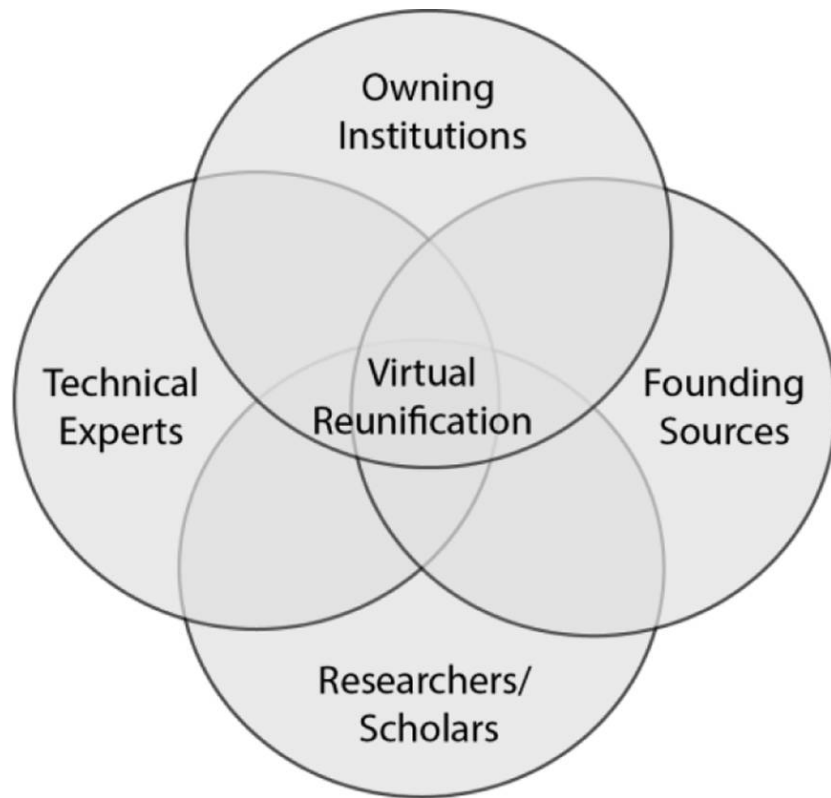


Figure 3. Virtual reunification: a stakeholders' approach

terests of various individuals and groups. Likewise, it is useful to reckon the balance between stakeholders' aspirations with what their organizational technology capabilities can accomplish as well as what the technology can actually deliver. Thus, we need to bring into perspective how established work flows result in (or limit) desired products or outcomes. In addition, broader institutional goals and capacities profoundly influence project goals and priorities. Heritage professionals and administrators will fulfill their project aspirations within the constraints of available resources and technologies.

The consolidated approach illustrated in figure 4 offers a more complete understanding of virtual reunification projects. This may be important particularly for projects in planning stages since it not only points out the technological capacities necessary for successful virtual reunification efforts but also identifies crucial social and institutional elements of such collaborative projects. Of course, this consolidated perspective must be further tested with empirical research. While generated from existing projects and reports, the best way to fully

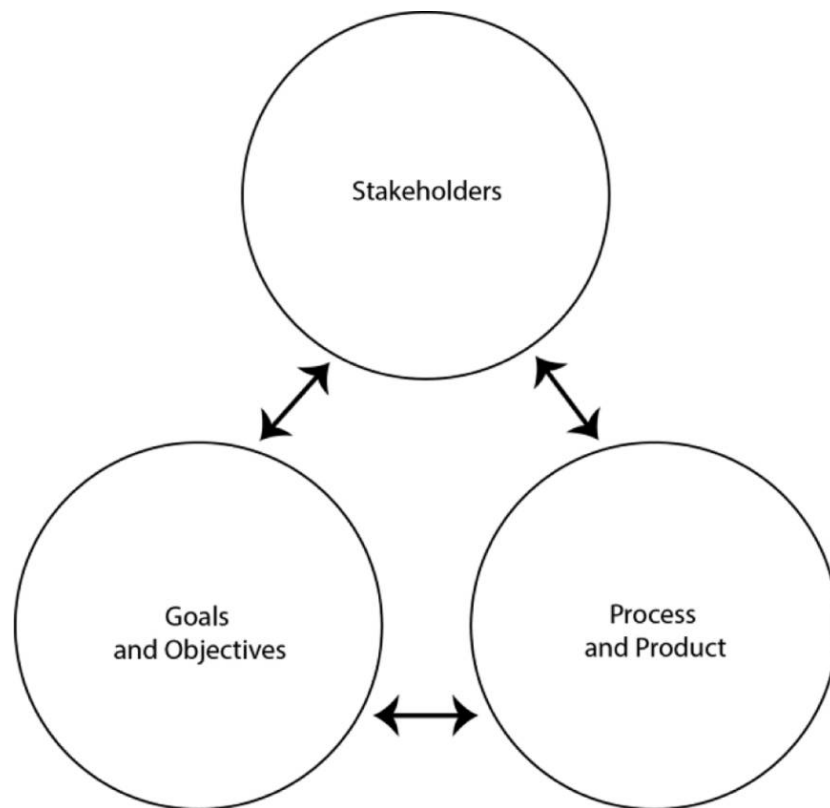


Figure 4. Virtual reunification: a consolidated approach

comprehend its power and validity as a framework is through use that may lead to refinement or revision.

Conclusion: Requirements, Considerations, and Limitations

Virtual reunification, which at present has become a common approach to digital projects in heritage institutions and promises to be of continued and growing interest, bears further scrutiny. Although such projects have received much attention over the past few years, much of the discourse about the relationship between cultural heritage and digital technology has been descriptive and introspective, focusing on successful projects and technical considerations (IMLS 2006). Fewer sources address virtual reunification specifically, and those that do are often celebratory. Austenfeld (2010) and many others underscore the importance of certain key elements in successful reunification projects, including institutional cooperation, development of procedural protocols, adherence to established technical standards, funding

support, scholarly and research demands, and involvement of various subject area experts.¹² These works are mostly in the form of reports detailing exemplars of successful digitization and reunification projects. They therefore tend to reflect on the key elements that led to certain projects' successes. These sources also enumerate the technical decisions made and the procedures that repositories followed, for instance, the rules regarding format and transcription, the web features utilized to represent and structure the collections online, or the scanning technology used. Many of these are self-reported reflections after work on the project has finished.

In order to better understand the implications for organizational relationships and scholarship, I have proposed models that may help in analyzing and preparing for virtual reunification projects. This responds to the literature's lack of nuanced accounts of the decision-making process and the nontechnical factors that institutions take into consideration as they decide to embark on virtual reunification projects. In addition, I have identified key challenges and barriers that projects should address when seeking to use digitization as a strategy to reunify dispersed collections online. Identifying and understanding these issues takes us a step toward fuller appreciation of how institutions reach consensus and negotiate internal digitization programs and priorities in the context of a larger inter-institutional arena and how a cooperative project can impact a repository's policies, procedures, and attitudes toward a set of collections (Conway 2008). A fuller understanding of virtual reunification must not only take into account the preconditions cited in reports and publications but also consider how those factors, as discussed here, may play out in context.

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Errata

Figures 1 and 3 in “Understanding Virtual Reunification” by Ricardo L. Punzalan published in July 2014 (vol. 84, no. 3) contained typographical errors. The correct figures are below. The publisher regrets the errors.

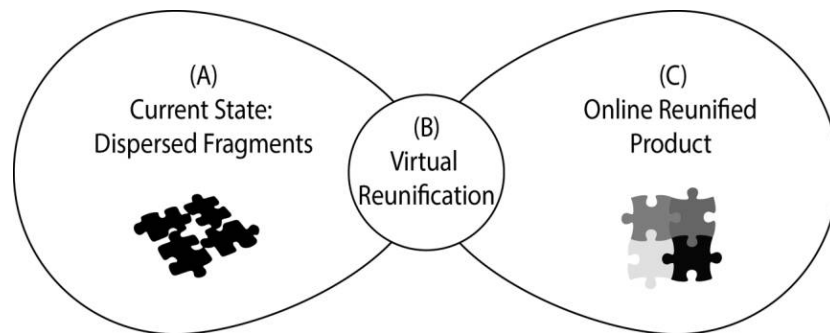


Figure 1. Virtual reunification: a linear and goal-oriented approach

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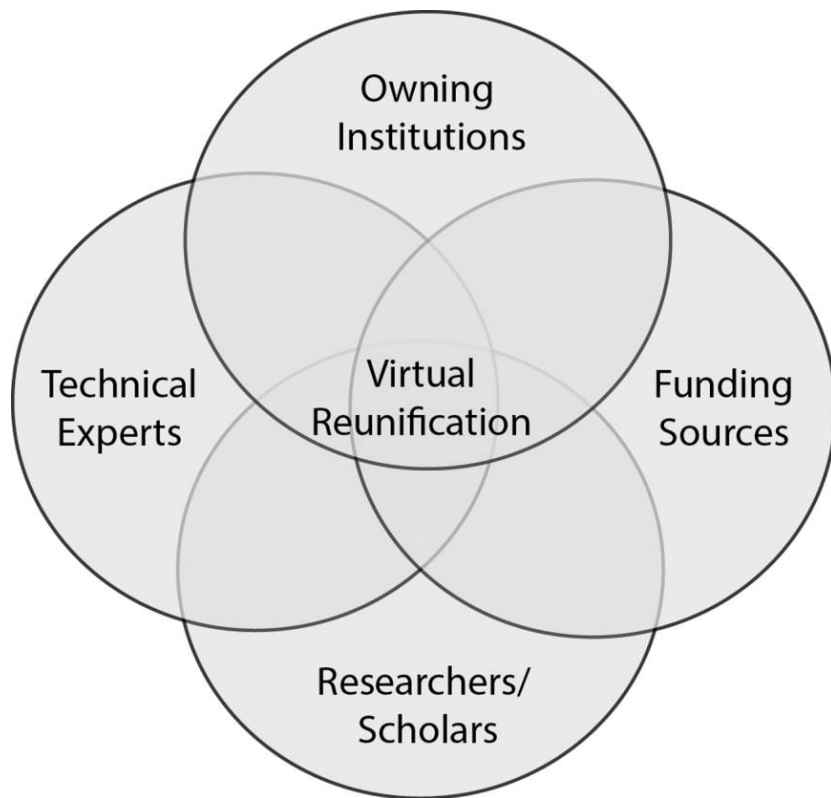


Figure 3. Virtual reunification: a stakeholders' approach