ARTICLES

New Uses for Old Records: A Rhizomatic Approach to Archival Access

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ABSTRACT

Although some archives have begun to embrace Web 2.0 technologies in their outreach activities to facilitate greater access to their collections, many archives continue to promote traditional hierarchical methods of access. This article posits that archives should develop a more radical approach to user engagement. To begin to conceptualize this new approach, the authors introduce Deleuze and Guattari's concept of the rhizome, an open, nonhierarchical, and acentric system, as opposed to the arborescent model that currently informs and structures the way archivists arrange, describe, and provide access to their archival materials. They then describe recent collaborative projects and techniques that encourage a reworking of the traditional arborescent model and make new rhizomatic connections into the archives, including social media crowdsourcing projects, gamification techniques, GIS interactives, mobile applications, and remixed archival photographs. The concluding section discusses the implications of supporting these types of initiatives and the need for professional guidelines for dealing with the ethical issues that may arise with a more radical approach to user engagement.

KEY WORDS

Social Media, Rhizome, Outreach, Access

In his state-of-the-art review of archival descriptive practices, Geoffrey Yeo stated, "archivists have long believed that records have a collective significance, and that knowledge and their meaning and context is lost or diminished if their collective nature is not protected and preserved."[1] To preserve and foreground this nature, archivists have traditionally represented records in hierarchical descriptions with a file belonging to one series and each series belonging to one collection. Traditional methods for retrospectively describing records in mono-hierarchical finding aids, however, have been questioned. For example, the Australian series system supports the linking of files to more than one series and series to more than one creator. On the other hand, David Bearman suggested item-level control with appropriate metadata provides a more accurate representation of the content, context, and structure of electronic records than hierarchical finding aids.[2]

Yeo concluded that despite

> their different perceptions and priorities, many records-focused thinkers are concluding that, ideally, description requires relational and granular rather than hierarchical and purely collective approaches. Records-focused professionals have recognized that relational systems can extend documentation of context beyond the single creator of the traditional model, beyond Scott's multiple creators to the functional and societal context of the act of creation and to actors and actions involved in the record's subsequent adventures. . . . From a user focused perspective, relational systems bring concerns about ease of use, but also have the potential to provide users with new and more powerful means of engagement.[3]

At the same time, as the move toward a relational approach to metadata advances, many have called for user-generated descriptions.[4] For example, Max Evans suggested that archivists could use Web-based user contributions, a system that "uses the eyeballs and intellect of thousands of volunteers."[5] But have archivists given up their authoritative voice and replaced it with comments and opinions of users? Does the process of flattening archival descriptions and highlighting societal provenance truly open up the archives? Will these new techniques facilitate new and more powerful means of engagement, or are these methods a simple tweaking of our traditional modes of access, ones that continue a well-entreated status quo?

In this article, we argue for a more radical approach to user engagement by drawing on the concept of the rhizome, as discussed by Gilles Deleuze and Feliz Guattari. In an experimental spirit fitting with the nature of the rhizome, we use this concept and present ideas that are at times playful, a little worrisome, and, hopefully, thought provoking.

The Rhizome

In *A Thousand Plateaus,* Deleuze and Guattari presented the concept of the rhizome as a nonhierarchical, acentric system with multiple entry and exit points. They drew on examples from biology, philosophy, psychiatric thought, as well as the arts to argue against traditional hierarchical ways of thinking. According to Deleuze and Guattari, traditional theories that follow logical, closed, static, hierarchical structures often represented by the tree model are inferior to subjective, politicized, open, dynamic realms of thought represented in the concept of the rhizome. They critiqued the tree model, stating, "One becomes two: whenever we encounter this formula, even stated strategically by Mao or understood in the most 'dialectical' way possible we have before us the most classical and well reflected, oldest and weariest of ideas."[6] In contrast is the rhizome, which "ceaselessly establishes connections between semiotic chains, organizations of power and circumstances relative to the arts, sciences and social struggles."[7] Coyne described the rhizome as a "rich open-ended conversation."[8]

According to Deleuze and Guattari, the rhizome has a number of principal characteristics. First, any point on the rhizome is always connected to another, as opposed to the tree root, which works in a hierarchical, plotted path. The rhizome is a multiplicity without subject or object, with no observed unity, and it cannot be reduced to any type of structural model. It may break or become severed at any point, but it will either reconnect where it once was joined, or start up again. As de Freitas pointed out, as rhizomes reconnect, they incorporate new kinds of agents, in an act of becoming.[9] The rhizome is not composed of units, but of dimensions or directions in motion. Rhizomes grow around edges and between gaps, and are always on the outside. A significant point to Deleuze and Guattari's argument is that the rhizome and the tree root models are not direct binary opposites. Tree and root structures can exist in rhizomes; likewise, rhizomes can grow in the midst of roots. In their words, there are "knots of arborescence in rhizomes, and rhizomatic offshoots in roots."[10]

Western philosophical and scientific thought is grounded on the tree model, and this hierarchical view of the world has shaped the way we see and approach our practices. The rhizome fosters an alternative view. Estelle R. Jorgensen and Iris M. Yob argued that the metaphors are "large and fundamental and radical . . . [the metaphors] are not used merely to expand an idea already formed but seem to be used to suggest an idea that further reflection will probe and articulate."[11] In systems designed on the root model, "an element only receives information from a higher unit, and only receives a subjective affection along pre-established lines."[12] Deleuze and Guattari suggested this way of thinking is echoed in information science; likewise, archival theory also reflects the arborescent model. This hierarchically structured worldview shapes

and controls archival practices of arrangement, description, and archival interfaces. As previously discussed, archivists have traditionally represented their materials in finding aids, access tools that highlight whole-to-part relationships. One becomes two. To effectively access and use the records, users must have a good understanding of the arborescent hierarchical structure and provenance of archival materials, as well as the controls placed on the records by archivists.

Recent calls for community archives, participatory archives,[13] and archival commons[14] suggest archives should move toward a more radical user orientation, one that we suggest fits well with the rhizome. Some archivists assert that social media, or Archives 2.0, will fundamentally change the way users interact with the archives, the way archivists work, and the relationships among archivists, users, and records. Kate Theimer called on archivists to employ social media technologies and invited user contributions and participation in archival functions; users should add their own descriptions of archival resources, share their knowledge with other users, select materials for digitization, rate or rank the usefulness of materials, and contribute their stories to archival websites.[15] Joy Palmer opined that Archives 2.0 is a broad "epistemological shift which concerns the very nature of the archive."[16] Similarly, Joy Palmer and Jane Stevenson emphasized that the use of social media applications results in "openness, sharing and collaboration and de-privileges archival authority."[17] Open, acentric systems are in line with the rhizome.

Social media technologies can be rhizomatic, but many archives currently use social media technologies in ways more reflective of a hierarchical, controlling, central authority. Jenny Kidd identified three organizing frames for social media activity: the Marketing Frame, which promotes the institution; the Inclusivity Frame, which relates to notions of connecting to real and online "community"; and the Collaborative Frame, which enables users to cocreate stories in the archives.[18] The Marketing Frame follows along a plotted path while the Collaborative Frame provides an open, dynamic, radical, subjective, and more profound environment. The Collaborative Frame allows for the incorporation of new kinds of agents in an act of becoming, reflective of the rhizome. Researchers who have studied the use of social media by archives suggest most archival use of these technologies align with the Marketing Frame; archives have predominantly used social media to market the "face" of the archives and promote its events and collections.[19] Adam Kriesberg recently conducted a study on the use of Twitter by thirty-four archives. His content analysis revealed that out of 1,880 tweets, more than 50 percent were related to marketing the archives, including administrative updates, links to institutional site content, and event promotion.[20] Alexandra Eveleigh has created a user participation matrix to analyze the various types of participation practices and crowdsourcing projects in archives. The matrix is intended to "set out a framework through which existing

practical initiatives can be assessed, particularly in terms of their influence on archival professionalism."[21] She differentiated between structures that are mechanistic and organic, and contributors who are part of a community or a crowd. The framework aims to analyze the types of relationships between user and archivist in crowdsourcing projects, such as the extent of user involvement in performing archival functions, and the role, control, and authority of archival professionals. This framework can help archives assess user contributions to their crowdsourcing initiatives, including the degree of community building the projects foster, as well as the degree of mechanistic controls in place. The organic, community section of the framework aligns well with the rhizome, but the mechanistic areas fit better with traditional archival techniques of outreach.

Archives need to embrace archival 2.0 programs that extend archival access and facilitate open-ended conversations with their communities if archival records are to be exposed to new contexts and new uses. They need to support organic, rhizomatic structures that empower individuals and communities to access and use records. In adopting this approach, we are not suggesting that traditional description techniques are not needed, or like some that traditional archival theory or methods reflect the weariest of thinking; the rhizome can grow within the tree root. However, we are suggesting that concomitant with traditional systems, archivists need to develop collaborative frames supported by nonhierarchical, acentric systems that foster open, dynamic, radical, political, and subjective access. Social media technologies can transform the archives, but only if the archives employs the technologies to engage, democratize, and collaborate, rather than promote and market. We also posit that archivists will need to establish principles and revise their codes of ethics to facilitate their use of these new technologies. Before discussing the ethical decisions that may arise from the use of these technologies, we provide a brief overview of a few archival projects that could move the archives to a more rhizomatic approach. These examples are not presented as a definitive list, or even as exemplars. They are examples of projects that could help the archives become a more open, dynamic, organic, subjective, collaborative, and at times, politicized space.

Social Media Crowdsourcing and Gamification Projects

The Year of the Bay is a year-long community history project to celebrate the history of San Francisco Bay. It uses HistoryPin, a collaborative social media application that invites archives, museums, libraries, and individual users to post historical materials, encourages crowdsourcing for local historical materials, and cultivates an online space for users to share their memories.[22] Year of the Bay is funded by the Andrew W. Mellon Foundation and supported by partnerships with numerous cultural heritage organizations from large academic

archives, including the California Historical Society, the San Francisco Public Library, the U.S. National Archives, the San Francisco Municipal Transportation Agency Archive, and neighborhood history groups. The project site asks users to interact with materials, to add their stories, and, at times, to play with the materials. Anniversaries of events, such as the seventy-fifth anniversary of the Golden Gate International Exposition (GGIE) on Treasure Island in 1939, are celebrated. Photographs of the exposition are provided with text that offers historical information about the event. The short, online exhibition of the exposition requests readers to add their stories about their experiences of the GGIE and to "pin" (add) their photographs to a map of Treasure Island. Participants can also overlay their historic photographs onto a current Google street view of the area. The Year of the Bay provides access to archival materials and users' stories through HistoryPin's website rather than a traditional archival website.

The Year of the Bay also uses gamification techniques to encourage users to describe archival materials. Gamification is a method that private, nonprofit, and government organizations have increasingly adopted to promote user engagement, virtual learning, and contribution to crowdsourced knowledge building. Gamification takes real-world tasks and objectives and turns them into games that engage people, encouraging them to complete tasks linked to play. In doing so, it attempts to link extrinsic rewards to intrinsic motivation. Gamification uses game thinking and game mechanics in nongame contexts to enlist users in problem-solving activities. A review of research on gamification shows that employing gamification methods generates positive effects.[23]

In applying gamification techniques, the Year of the Bay project introduced the concept of "mysteries" to engage with its users.[24] Mysteries are contextual information missing from photographs. HistoryPin urges users to participate in finding this unknown information by asking questions about the content and context of a photograph. Some questions include, "Where was this photograph taken?"; "When was this photograph taken?"; or "Where is this location today?" Users are also asked to overlay historical photographs with their present-day locations on Google Maps. By referring to mysteries in need of solutions, HistoryPin puts users into the role of historical detectives; participants collaborate and utilize visual clues from old photographs coupled with their present-day knowledge to form new interpretations. The mysteries section also features progress measures, the total count of mysteries, mysteries "under investigation," and the number remaining unsolved. Members can have their own HistoryPin accounts that track the sources of information they provide about the photographs. The Year of the Bay project resulted in numerous HistoryPin participants sharing their expertise to identify the locations, years, or subjects of historical images. This enriches the materials posted to the Year of the Bay but also engages participants in the project.

Archival collaborative outreach projects presented on institutional websites also utilize gamification techniques to increase participation. The National Archives of Australia, for example, uses these techniques to motivate virtual visitors to transcribe digitized handwritten documents. The archives seeks the help of volunteers to transcribe these materials and make them fully searchable, and therefore, more accessible.[25] Their arcHIVE project categorizes the documents as easy, medium, and hard to transcribe, and allows transcribers to choose the level of transcription difficulty they wish to tackle. As they transcribe a greater quantity of documents with increasing difficulty, they can move from a novice user to an expert user. Transcribers collect points for transcribing documents and can trade their points in to receive virtual badges, a photocopied file, or a publication of the National Archives. The site also includes a leaderboard that celebrates the top contributors to the website according to their points. Clicking on a contributor's name reveals the list of records the participant has transcribed and the records he or she is still transcribing. The top contributor has over four million points. By December 2014, 43,595 descriptive records had been added to the search database and 11,029 of 13,554 records had been fully transcribed. This project is similar to Old Weather, a collaborative Zooniverse project, which invites the general public to help scientists recover weather observation data by transcribing nineteenth-century U.S. ships' logs.[26] Volunteers can sign onto a ship, get points for each page they transcribe, and get promoted from cadet to captain if they transcribe enough documents.

Archives have traditionally been places of scholarship and serious study for researchers, but social media, crowdsourcing, and applications of game elements can challenge traditional ways of thinking about archival materials. This type of engagement in different constructed environments allows multiple pathways for archival users to access records and to participate in the description of archival materials, as well as opening the door and inviting in diverse perspectives instead of a singular meaning. In the Year of the Bay project, contributors decide which materials to add and which stories to contribute. This aspect aligns with the collaborative model and the rhizome. In the arcHIVE project, however, contributors transcribe materials the archives has chosen. The emphasis is on the contributor rather than on a collaborative model. To truly embrace the rhizome, archives should facilitate "rich open ended conversation[s]"[27] about the records, inviting collaborators to contribute their materials and to comment or provide alternative interpretations of the events documented in archival records.

GIS Interactives

Virtual maps and Geographic Information System (GIS) interactives provide a dynamic way of playing with and navigating records linked to geographic

spaces. This includes data mashups, or rather, more than one data source combined in a novel way to provide a new service.[28]

The City of Philadelphia released its website HistoricPhilly.org, aimed at increasing access to its archival photographs.[29] The project for the site's creation drew on the resources among a number of organizations, including the Philadelphia City Archives, the Philadelphia Water Department, and the Free Library of Philadelphia. As part of this initiative, the city digitized 9,600 archival images by 2011. The archives also georeferenced its photographs and employed ESRI (a GIS-mapping company) software, which facilitates searching of archival holdings by geographic location. Users can also access materials by street address, intersection, or neighborhood, as well as input typical archival search criteria such as key word, collection name, series, and time period. Researchers can use Google Earth and Google street view with the historical photographs to make connections between past and present city geography. Drawing on data from Google Analytics, Deborah Boyer, Robert Cheetham, and Mary L. Johnson noted that "Geographic searches account for the most frequently used search criterion on the site with 661,119 address searches conducted from April 2010 to April 2011."[30] This implementation of a GIS application provides new entry points to access archival materials, ones that augment a standard hierarchical archival search query.

A second example of a GIS interactive is a map viewer that overlays a hand-drawn map of New York from 1836 over a present-day digital map of the same location.[31] This interactive allows users to view different parts of the 1836 map by scrolling over the present-day map through a viewfinder, thus allowing them to more easily comprehend differences in New York topography and urban development. This project involved collaboration among multiple individuals, including the David Rumsey Map Collection and ESRI. Chris Olsen, an ESRI employee, developed a similar viewer that provides access to multiple historic maps of Pittsburgh, Pennsylvania, and Cleveland, Ohio. In both implementations, maps reflecting topography from different time periods are georeferenced, stitched together, and positioned chronologically.[32] The map viewers allow users to scroll through a location during different time periods as represented on the maps to view and analyze the gradual transformation of the cities over time. The viewers also mark and identify significant Pittsburgh and Cleveland landmarks, enabling users to see how the cities developed and changed. When selected, basic information about a historic landmark appears, including the address, a contextual description, the name of the architect (if applicable), and a present-day photograph. Although the viewers do not provide specific metadata about each historic map, which could obscure their provenance, contributors could easily provide this information in the "About" section of the sites.

Map and GIS-enabled interactives promote increased discovery of records of cultural heritage institutions, facilitate new ways of analyzing maps as a visual genre that changes over time, and create valuable information and relationships among recontextualized, aggregated records from previously disparate locations. These tools, developed through partnerships involving multiple individuals and institutions, provide opportunities for archives and libraries to merge their collections virtually. As a result, collections and records are made accessible to many new groups of users. Interactive maps illustrate a rhizomatic way of laterally, rather than hierarchically, connecting dispersed repositories and records. They offer the potential to engage users through a number of connected entry and exit points to materials that previously existed as pockets of siloed information, or connected only to other records from the same creator.

Mobile Apps

As the demand for omnipresent and ubiquitous access to information has become commonplace with the present generation of Internet users, various disparate domains have developed mobile applications. Scott La Counte argued that many businesses have successfully attracted the mobile user to their products and services through mobile application development, but libraries continue to overlook these users.[33] We argue that most archival institutions also do not serve these users as well as they could. As mobile technology becomes more prevalent and far more sophisticated, mobile application software, or "apps," have proliferated. Some applications simply serve as mobile versions of Internet websites with simplified navigation and design features; archives that employ these application can provide access to their websites from a phone. However, other types of apps offer the potential for more innovative services.

Some mobile applications (or "native apps") create an entirely new information product and offer businesses and public sector organizations a promising form of marketing and outreach. In the cultural heritage sector, museums have taken the lead in offering mobile applications to supplement their exhibits, or to offer unique virtual exhibits.[34] However, archives and libraries have also begun to delve into mobile development. The U.S. National Archives and Records Administration (NARA) has created a number of mobile applications for a variety of purposes.[35] For instance, its DocsTeach application is a tool intended for teachers to teach their students with documents from the National Archives via iPads and mobile technology. Together with AT&T and the John F. Kennedy Presidential Library and Museum, NARA also created an application that brings its *JFK and the Cuban Missile Crisis* exhibit to mobile devices. Users who cannot visit the physical exhibit can experience it virtually on their iPads through multimedia, including viewing important documents and listening to JFK's speeches.

Cutting-edge mobile apps use GPS technology and an additional information source to add value for apps users. These apps take advantage of push technology, where service providers send messages or alerts to users' mobile phones; the alerts are triggered by online software or a user's GPS location. Virtual tours and exhibits employ this new generation of mobile applications; however, many projects developed over the past few years demonstrate the potential of mobile computing as a unique and exciting learning tool. For example, Michigan State University has developed an app called msu.seum, mobile software that aggregates information about the campus of Michigan State University and exposes the "scholarly narrative" of the history of the campus, including how archaeology has been conducted across the campus, through a virtual GPS-navigated tour.[36] Museums have also used GPS technology in the creation of their apps to support user creation of customized tours of the museum, to facilitate wayfinding through different learning spaces, and to utilize social media technology. Museum mobile apps also feature games to enrich museum visitors' experiences through play, such as scavenger hunts.[37] Archives do not typically have extensive exhibition space, but they can capitalize on virtual space for GPS experimentation and collaboration. The Building Stories project, a crowdsourced online building inventory and mobile application, provides an interesting example.

Building Stories offers Canadians a way to identify community heritage assets by offering virtual space to individuals and communities who are interested in the conservation and appreciation of local heritage sites.[38] Individuals who register with the site can create entries in the online building inventory; they can include descriptions and upload images of materials such as related documents and photographs. Through this inventory, Building Stories helps place historic sites and buildings on municipal registers and identifies regions as Heritage Conservation Districts. A participant only needs to provide a minimum of information to register a heritage site: the municipal address, a photo, a contributor name, and the common name of the site or building. Optional information can also be added such as related documents, old photos, stories, videos, and various other media. Records are linked through their connection to a historic site rather than through provenance. The mobile application component combines information input from various sources and allows users to search for walking or driving tours to reveal heritage sites, as well as to create their own specialized tours. If users accept push notifications, Building Stories will alert them as to their geographic proximity to historic sites. The context for gaining access to historic materials is through geographic location; Building Stories enables users to access archival materials related to heritage sites based on the location of their mobile devices rather than on traditional archival access points.

Mobile applications offer an exciting potential for archives to engage with an exponential number of users, as the current generation relies on mobile computing to search for and retrieve information. Mobile versions of archival websites can provide information in a medium ever increasing in popularity, while native apps can contribute new ways to discover, engage, and learn about archival materials. These apps allow archives and archivists to extend beyond their reading rooms and form new connections. They enable researchers to connect to alternative virtual experiences, contributing new modes of learning and discovering. Though promising, mobile apps can be time consuming and expensive to develop; however, according to La Counte, collaborations and partnerships with institutions and individuals with software development expertise can reduce this burden.[39] Additionally, the adoption of a social media website provides ways for archives to develop a mobile presence without knowledge of advanced programming. Social media tools such as Twitter, Facebook, and Flickr provide mobile apps and offer archives the capability of engaging with users on various platforms.

Remix and Photographs

Remix applications and projects that showcase archival materials through creative appropriation can also provide new entry points into the archives. According to Stefan Sonvilla-Weiss, remix practices, along with collage, montage, or sampling, "all use one or many materials, media either from other sources, art pieces, or one's own artworks through alteration, re-combination, manipulation, copying, etc., to create a whole new piece. In doing so, the sources of origin may still be identifiable yet not perceived as the original version."[40] Examples of remix practices are photoshopped digital images, remixed audio tracks, and new forms and combinations of multimedia. For archives, original records can be manipulated and combined with modern media to present archival materials in a new form. We view remix practices as having the potential to be rhizomatic because they break from traditional modes of access to archival records. Remixed media provide new paths into the archives through the assistance of new agents who can alter, manipulate, and play with the records. These unique combinations can engage new audiences and may introduce these users to historical materials within a new frame of reference. Remix offers new outlets for archival records to be discovered, especially for users who may not walk into an actual reading room or browse provenance entries on an archival website.

Some archives are taking a very active role in promoting augmented or remixed photographs, as seen in the "History Happens Here" contest organized by the U.S. National Archives and Records Administration.[41] In this contest, NARA invited people to create their own "augmented reality" by holding up

archival photographs of national landmarks, historic buildings, or memorable events in front of their physical, current-day manifestations. Individuals were instructed to take a photograph of the archival photograph with its current background. The archives provided a set of eighty photographs of iconic events or places as examples, but invited participants to use other photographs from its collections. This contest encouraged members of the public to submit photographs that "mashed up" the present day with the historical images. NARA invited participants to contribute their "mashups" to win one of the twenty prizes; the archives reminded participants to include the original captions and persistent URLs for the archival photographs. In encouraging contributions, NARA stated: "Your creativity and input is always appreciated" and suggested that the "History Happens Here" project is addicting!

While the "History Happens Here" project does not require sophisticated technical skills, some professional photographers use their expertise and artistry to create new artworks from archival images. Harry Enchin, a photographer from Toronto, created a photography series called *Toronto Transformed*.[42] For this series, he collected reproductions of archival photographs depicting city life from the City of Toronto Archives. He also photographed the same locations as depicted in the originals. Next, he appropriated the original photographs, combining the digitized archival photographs with the new corresponding photos. In doing so, he displayed the new content in color and the old in monochrome to emphasize the difference between past and present. On his website, Enchin claims that photographs are "authentic visual references," which he takes one step further to evoke memory and a present-day familiarity. Not only have Enchin's images received much acclaim in art circles, but he has also disseminated them widely through magazines and popular websites like *blogTO*.[43] These photographs are artistic, interesting, and fun, but they would not meet the archival definition of authentic.

A second, more provoking example comes from New York. Marc Hermann, a photographer and historian, designed a project converging past and present photographs.[44] Instead of using streetscapes or iconic buildings, however, he used vintage crime scene photographs from the *New York Daily News* Archives. To create his photographs, he researched the locations of these particular crimes and took new photographs depicting the current areas where the crimes had taken place. He wove the two photographs together, sometimes with shocking results. He composed captions for each of his artistic creations, including the present-day New York address, the name of the original crime scene photographer, and contextual details regarding the crime. Hermann noted that his photography and inclusion of addresses into captions causes viewers to re-evaluate their walks through the city and the environments they take for granted. These crime scenes combined with the images of the current locations connect places with their almost forgotten pasts.

Discussion

Though categorizing the elements of the rhizome seems in some ways to violate its spirit, we next provide a breakdown of the characteristics of the rhizome and highlight how archival implementations align with the rhizomatic approach. The lines between the categories are not hard and fast, not either/or, and not bounded; they continually overlap, break off, and reconnect. Nonstructured subsumes nonhierarchical, but nonhierarchical is not necessarily nonstructured. However, to better understand the facets of the rhizome—nonhierarchical, nonstructured, dynamic, ceaselessly connected, acentric, and accessible at multiple points—and how they are or are not manifested in the crowdsourcing, GIS, mobile applications, and remixed media implementations, we define the rhizomatic elements in Table 1.

Nonhierarchical simply means that information is not classified hierarchically or not grouped in successive levels or layers. In nonhierarchical systems, items can be accessed directly without relation to other records in the file, series, or *fonds*. Descriptions are discrete rather than linked in a part-to-whole relationship, for example, *fonds*, series, file. While this method of accessing records provides direct, unmediated access (as in cases such as the social media site Flickr), it may obscure the context of records' creation and use. Unless contextual metadata is provided, it may break the archival bond that the traditional description protects. As previously noted, Yeo suggested that relational systems can present context and may have the "potential to provide users with new and more powerful means of engagement."[45] Furthermore, nonhierarchical implementations could support the creation of new bonds, the making of ceaseless connections, and the building of new associations among records.

Nonstructured or *unstructured* indicates a lack of a well-defined structure or organization, or the lack of a definite pattern or arrangement. Relational databases, which may support nonhierarchical access or the "relational and granular" approach suggested by Yeo, depend upon well-defined structures. Building systems that reject strict organizational or definite patterns may create novel ways to access records, but they may also eliminate adequate links and metadata that protect important characteristics of records. For example, systems without defined structures might eliminate links to metadata that document whether a record has been modified or corrupted.

Dynamic describes a process or system characterized by constant change, activity, or progress. The dynamic, constantly changing nature of social media technologies provides a powerful draw for many new users. However, the dynamic nature of these systems will undoubtedly lead to a loss of control, which occurs in acentric processes as discussed below. Dynamism may also threaten the fixed nature of records and their authenticity. Dynamic systems that enable

constant change can raise concerns for the security of digital records. In cases such as remixed photographs that interweave new and old, and at times, fail to document the provenance of both parts, the new, augmented piece or art form may hide the meaning of the original record. Dynamic, constantly changing systems reinterpret the records and perhaps "fictionalize" the past, as discussed by Koltun below, but at the same time encourage open-ended conversations with archival materials.

A system that allows *ceaseless connections* has the ability to construct new bonds or new associations among records. Social media simplifies the generation of new ties by users and establishes novel networks among records. Innovative tools that support this coupling hold great promise to expedite information sharing and open up access to records through innovative, rather than pre-established, paths. This functionality will diminish the traditional archival emphasis on part-to-whole access or foregrounding associations that arise out of the creation and use of records before they are taken into archival custody. However, it empowers users and gives meaning to records from a plethora of subjective viewpoints.

Acentric means having no center or no central control. Acentricity facilitates serendipitous discovery and access through new decentralized outlets. Similar to dynamic systems, this may also raise concerns over loss of control and security, and could constitute threats to the authenticity of records.

Table 1 indicates the degree to which projects that use each type of application discussed reflect the rhizomatic characteristics. We have included two

Table 1. Rhizomatic Characteristics of Applications

Rhizomatic Characteristics	Crowdsourcing and Gamification		GIS Applications		Mobile Apps	Remix Applications
	Year of the Bay	ArcHIVE	HistoricPhilly	Interactive maps	Building Stories	Remixed photographs
Nonhierarchical	Yes	Yes	Yes	Yes	Yes	Yes
Nonstructured	No	No	No	No	No	No
Ceaseless connections	Yes	No	More connections	No	Yes	New connections
Dynamic	Yes	No	Yes	No	Yes	No
Acentric	Yes	No	No	No	No	No
Multiple entry and access points	Increased access	Increased access	Increased access	Increased access	Increased access; provides a different type of access	Increased access; provides a different type of access

projects that use crowdsourcing/gamification and GIS applications because the projects diverge in how they reflect various characteristics.

While most implementations of applications discussed here have improved access to archival materials by providing nonhierarchical access and multiple entry points into the archives, all but one of the implementations continue to maintain central control, and only half of the projects are dynamic and constantly changing. For example, the arcHIVE project increases access, as the transcription of documents facilitates full-text searching. However, the archives decides which records it wants transcribed. The archives continues to make almost all of the project's decisions. In contrast, the Year of the Bay project, which is hosted on the social media platform HistoryPin, allows users to contribute their documents and knowledge with little central control over what is contributed.

Though the projects listed in Table 1 have some rhizomatic attributes, most of the projects reflect more the mechanistic approach as discussed by Eveleigh than the organic, collaborative, and rhizomatic approach promoted in this article. Archivists' aversion to decentralized control may derive from primary duty and obligation to preserve the authenticity and integrity of records, which the profession has traditionally linked to bureaucratic control and neutral custodianship of records.[46] The SAA *Code of Ethics* states

> Archivists ensure the authenticity and continuing usability of records in their care. They document and protect the unique archival characteristics of records and strive to protect the records' intellectual and physical integrity from tampering or corruption. Archivists may not willfully alter, manipulate, or destroy data or records to conceal facts or distort evidence. They thoroughly document any actions that may cause changes to the records in their care or raise questions about the records' authenticity. . . . Archivists protect all documentary materials for which they are responsible.[47]

However, the *Code of Ethics* also states, "Recognizing that use is the fundamental reason for keeping archives, archivists actively promote open and equitable access to the records in their care within the context of their institutions' missions and their intended user groups. They minimize restrictions and maximize ease of access."[48]

Social media technologies, remix practices, as well as GIS and mobile applications can increase access to materials and improve access for many different types of users. On the other hand, these technologies raise questions about the security of the records and the protection of the materials' original provenance. Using one record to create new records is not a new practice. In discussing the use of archival film footage in the Oliver Stone fictional movie *Natural Born Killers,* Lilly Koltun asked

> What does such a re-positioning, and commodification, do to the integrity (or the history) of the archival record? Most obviously, it does two things: It "fictionalizes" the record, hiding its provenance and original intended meaning (using the archival definition of provenance as records creator rather than the art historical definition meaning the hands through which an artefact has passed). At the same time it "realizes" the fiction, making the fictional appear real, authenticating the present meaning through a proposed resemblance to the past and rendering the commodification invisible.[49]

Remix technologies can fictionalize records, and they can obscure the provenance and intended meaning. The fictional authenticates the present meaning. However, this fictionalizing also opens up records to new audiences and promotes novel uses. These technologies invite and give voice to many audiences who have long been absent or marginalized in our archives. Furthermore, archives can protect the authenticity of the records in their care as well as release them to the Web to be augmented, played with, and accessed in lateral or granular ways. It is not either/or, not rhizome or arborescent frames, not fact or fiction, but an opening up, forging new connections and "new kinds of agents, in an act of becoming."

While the technologies do not necessarily produce threats to the integrity of records, some implementation of the technologies may raise questions about archivists' moral obligation to protect the privacy of individuals. As the SAA *Code of Ethics* notes, archivists should "ensure that privacy and confidentiality are maintained, particularly for individuals and groups who have no voice or role in collections' creation, retention, or public use" and "Archivists promote the respectful use of culturally sensitive materials in their care by encouraging researchers to consult with communities of origin, recognizing that privacy has both legal and cultural dimensions."

In an article that discusses the tension of making materials available online while still respecting the sensitivities of communities, Paul Dalgleish stated,

> The material that may cause concern to individuals or to the community if it were to appear online broadly falls into two categories. First, there is personal information that might concern the subject or a near relative. This includes data such as middle name, names of immediate relatives, data and place of birth, employment reports, results of aptitude tests, and applications for immigration. We need to recall we are speaking of information which has already been assessed as releasable under the relevant legislation or regime. Second, there is an ill-defined category of "inappropriate" or "unacceptable" content—material that might offend, distress or concern members of the community that have no direct connection with the material.[50]

Dalgleish posited that records grounded in a specific context and available in the reading room of a physical archives may raise concerns when digitized

and made available online. Personal information widely available on the Web causes new challenges to an archives entrusted with protecting the personal information of people documented in archival records. The New York crime scene photographs previously discussed identify the current location of each crime scene. Does highlighting the crimes that took place within a geographic area affect the community? The photographer provided the address for each crime depicted in his images, as he believed users need this information. The address provides contextual knowledge, but what do people currently living in these houses and these neighborhoods think about having their homes and communities exposed in this way? Furthermore, some of the crime photos contain images of homicide victims. One photograph shows an overturned tricycle and a woman grieving over her young sister who had just been killed. Photographs that make death or grieving into art do not seem appropriate or consistent with the archivists' code of ethics. Eliminating all control, or opening up the archives to all uses, may not be appropriate or acceptable when dealing with sensitive records that can distress, dismay, or impinge on a person's most private moments.

The Hillsborough digital archives provided broad access to the records relating to the Hillsborough disaster and cover-up.[51] The Hillsborough disaster, the worst stadium disaster in British history, occurred on April 15, 1989; ninety-six men, women, and children sustained injuries that resulted in death, an additional 766 people sustained injuries but survived, and thousands were traumatized by the events of day. Twenty years later, the British Government established the Hillsborough Independent Panel to oversee the disclosure of documents related to the disaster, discuss how the disclosed documents added to the public knowledge about the disaster, and create a digital archives of disclosed documents. However, in building the digital archives, restrictions on extremely sensitive information such as postmortem reports were enforced, though family members of the deceased were given access. Allowing records such as these with extremely sensitive information to be altered, remixed, or used in crowdsourcing projects that use gamification techniques may not be appropriate. Questions related to the fictionalizing of records, inappropriate use of records, and the need of the archivist to hold some records sacred or private should be discussed and debated by the profession.

Finally, archivists should consider what they should and should not do with user-contributed content. Jenny Kidd posited that

> In social media forums, the participants and their voices become the content, and the ethics of this need more consideration. There is something of a commodification of community occurring; online communities arising around cultural institutions are being ascribed value, but what kind of value is less

> clear. Perhaps, for the moment at least, being seen to be involved in this kind of activity is the end goal in itself. Conflating the ease of launching social media initiatives with assumptions that the dialogues they elicit will be easy to "manage" shows a fundamental mis-understanding.[52]

Though Kidd discussed museums and social engagement, her comments are equally true of social media forums promoted by archives. What is the long-term goal for soliciting this content from archival participants? The rhizome opens up the archives and cultivates rich conversations, but it also presents difficult, problematized terrain that archivists need to navigate.

The profession needs to develop a statement of principles to help archives flourish in this new terrain. Archivists need guidance on making records available online, using records in games, promoting remixes of their records, and participating in crowdsourcing projects. The *Code of Ethics* provides broad guidelines on issues of access and privacy, but the profession needs to ponder and debate these concerns and develop guidelines to assist archivists who make records available online, especially those made available for modification and augmentation using social media technologies or in crowdsourcing or gamification projects. Perhaps some records should remain only in analog form. A statement of principles should also provide guidance on how to deal with the content contributed by participants. What value are archivists ascribing to these voices, and how should archival system manage them? A statement of principles or guidelines can assist archivists who seek to identify possible consequences of their actions in the digital realm.

In the rhizome, users can access records outside of their highly structured, rigid frame; they can find novel, unexpected, serendipitous methods for accessing the archives and innovative ways to connect with archival materials—opportunities that will excite and provoke newfound interest. If archivists use gamification techniques or mobile applications, they can engage more participants and more collaborators, but archivists will need to consider how these changes will affect their archives. The rhizome reconnects in the act of becoming: what will the archives become as archivists incorporate these new agents? These technologies hold great promise. Gamification, GIS interactives, digital map viewers, mobile applications, and remix techniques could attract new user populations who have never, and will never, visit a physical archives or even access records through an archival database. These applications allow users to form new connections with archival records: to play with the records, produce new creations, and see the records in their own contexts. Many of these users may have no interest in the power of records to serve as evidence, the records' provenance, or their informational value. These users could seek out the archives for amusement rather than scholarship, accountability, memory, or social justice. The rhizome embodies a concept of breaking with hierarchical

traditions of access to provoke serendipitous discovery through new connections and the coupling of past and present in innovative modes. But the archives will reconnect and will incorporate new kinds of agents, as it continues in its act of becoming. Within the rhizome, however, archives need to maintain and support scholarship, ensure the preservation of evidence, and protect the rights and obligations of individuals. Archivists must fulfill their primary duty as trustworthy custodians who ensure future generations understand their pasts. Hopefully, the archival tree and root structures will continue to exist in rhizomes, and rhizomes will grow in the midst of their strong archival roots.

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