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Sharing Historic Costume Collections Online

Arden Kirkland

Kathi Martin
Drexel University

Marlise Schoeny
The Ohio State University

Kiki Smith
Smith College

Gayle Strege
The Ohio State University

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Description/Abstract

The recent increase in online costume history resources has provided scholars of dress with fresh sources of information for inspiring and validating their research. The best digital archives consider the needs of their users in creating systems that make it easy for more users to access the greatest amount of relevant information. Users of online costume history resources have specific needs that should be addressed, both for internal users (organizing and entering information) and external users (finding information). This paper follows a panel presentation at the 2014 Symposium of the Costume Society of America, on the subject of digital initiatives for sharing collections of historic costume underway at individual American colleges and universities. In the presentation and resulting discussions with CSA members, common concerns became evident, both for information seekers and managers of historic costume data. These concerns and potential solutions are addressed in the following paper.

Keywords

costume history, fashion history, collection management, open access, digital archives, collaboration

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Sharing Historic Costume Collections Online: Why and How

Kathi Martin
martink@drexel.edu
Associate Professor, Associate Director of Graduate Fashion Design
URBN Center, suite 310
Westphal College of Media Art & Design, Drexel University
3501 Market Street
Philadelphia, PA, USA
215-895-4941

Gayle Strege and Marlise Schoeny
strege.2@osu.edu
schoeny.6@osu.edu
Curator and Assistant Curator
The Ohio State University
175 Campbell Hall
1787 Neil Avenue
Columbus, OH, USA
614-292-3090

Arden Kirkland
arkirkland@vassar.edu
Costume Design Assistant, Drama Department
Vassar College
124 Raymond Avenue
Poughkeepsie, NY, USA
845-437-7917 / 845-437-5250 (fax)

Kiki Smith
ksmith@smith.edu
Professor, Theatre Department
122 Green Street
Smith College
Northampton, MA, USA
413-585-3216 / 413-585-3229 (fax)

Abstract

The recent increase in online costume history resources has provided scholars of dress with fresh sources of information for inspiring and validating their research. The best digital archives consider the needs of their users in creating systems that make it easy for more users to access the greatest amount of relevant information. Users of online costume history resources have specific needs that should be addressed, both for internal users (organizing and entering information) and external users (finding information). This paper follows a panel presentation at the 2014 Symposium of the Costume Society of America, on the subject of digital initiatives for sharing collections of historic costume underway at individual American colleges and universities. In the presentation and resulting discussions with CSA members, common concerns became evident, both for information seekers and managers of historic costume data. These concerns and potential solutions are addressed in the following paper.

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Introduction

There is ongoing development of technology to aid collection curators and managers in their jobs, but costume history collections often have limited time and funding, and technology (by nature) evolves quickly and sometimes even disappears. The projects of the individual institutions discussed here have surmounted problems with changes in technology, limited funding, and the various knowledge levels of staff, students, volunteers, and our public audience concerning both costume history and technology. A common objective among the authors is to create a model for an online environment for the best possible historic costume research, serving all types of costume scholars and exposing both the depth and breadth of our collections.

Who Will Use Our Archives And What Do They Require?

The first steps in developing a digital archive are to define the mission and responsibilities of the archive and to elicit and analyze the qualitative and functional needs of potential users. The findings can then be used to provide an archive that best serves the community. The Drexel Digital Museum (DDM) project **(Figure 1),** directed by Kathi Martin, Associate Professor in the Department of Design, includes images and data for selected garments from the Robert and Penny Fox Historic Costume Collection at Drexel University, and selections from the private collections of Iris Barrel Apfel, renowned collector of fashion, and Toby Lerner, prominent Philadelphia retailer.[1] In 1999 Martin began experimenting with data and image standards for historic costume management and online content delivery. Through surveys, interviews, and observation of fashion scholars, students, design professionals and educators, including a survey of the Costume Society of America (CSA) membership, the features and functions of the archive were determined.

The data collected were used to understand the audience by defining target user groups; identifying their work environment, available technology, frequency of web use; and considering the other methods of research currently used by the target audience. “Wish lists” of features were elicited and prioritized. Although the work environments, research methods, and technology were varied, the functional requirements were similar. It was discovered that what all the users wanted most from this site were high quality images, multiple views and details of the objects in the collection, and multiple ways to create parameters for their online search. The requirements of the internal user, describing, registering, indexing and storing data about the costume objects, were gleaned from articles being published on the migration of archival data from analogue modes of storage to computerized databases by other costume collections, such as Kent State, The Fashion Institute of New York, The Texas Fashion Collection at the University of North Texas, and The Costume Institute of the Metropolitan Museum of Art.

Inspired by Martin’s presentation of the DDM project in 2005 at a Costume Society of America national symposium, Gayle Strege, curator of The Ohio State University’s (OSU) Historic

Costume & Textiles Collection (HCTC), began to develop a digital resource, the Fashion2Fiber (F2F) database at OSU (**Figure 2**), to provide accessibility to digital images of collection objects and exhibitions that had already been digitally photographed but were not accessible via the Internet through the collection's database.[2] These artifacts from OSU's collection were chosen principally to meet the needs of classes taught in the Textiles and Clothing (now Fashion and Retail Studies) program at the university, specifically the History of Fashion course. This class was primarily a twentieth century overview of fashion history using a historicism format, with an introductory session of a review of historical silhouettes of dress from ancient times through the nineteenth century. Because of this, examples of historically fashionable silhouettes were deemed appropriate for inclusion. Given the extant garments in the collection, this meant examples from the late eighteenth century through the end of the twentieth, as well as examples of designer fashions from several historically significant European and American designers, could be photographed. In addition, focus was placed on another important user group and group of objects: teachers of American history in grades 8 through 12 and related historic clothing material culture artifacts. This was done as part of two grant-funded workshops titled, "Teaching History with Historic Clothing Artifacts" (**Figure 3**). The teachers were shown how to use primary source historic clothing artifact images on the Fashion2Fiber website to create innovative lesson plans and curricula.

The Drama Department at Vassar College began a digitization project in 2002 (**Figure 4**) to share their small research collection of historic clothing, about 650 objects.[3] Both the physical collection and the digital project are managed by Arden Kirkland, Costume Design Assistant on the faculty of the Drama Department at Vassar. Considering the limited access to the collection, due to limited staffing, Kirkland began in 2002 to insure that any time spent interacting with the objects included documenting them with digital images and text. The mission is to gradually make the collection accessible to a wider audience via the Internet, including not only the Vassar community but also the general public. Alongside the collection database and exhibitions, the Vassar collection also uses blogs to showcase the objects and processes for working with them. The roots of the Vassar collection are with Drama students who study the original clothing as the basis for building reproductions for theatrical productions. This group needs high quality views of the interior construction of garments. However, the audience for this collection has grown to include students from a variety of other disciplines, whose needs include seeing garments in context, supported by their relationships to other archival documents, and the interpretation of exhibitions.

A small working group of dress scholars, librarians, digital historians and software engineers have been developing a prototype database and tool concepts for an online research aid for historic costume. This group was convened by Kiki Smith, a Professor of Theatre at Smith College and Director of the Smith College Historic Clothing Collection[4] (**Figure 5**), and also includes Kirkland. The group first came together to solve a specific problem: to find an efficient way to scan, download, and publish research materials gathered in the pre-digital era, in this case, the vast collection of Nancy Rexford, a renowned independent scholar of historic dress. Realizing that there was no existing site where Rexford's material could be published and no one place to connect with other independent scholars, students, or researchers in other fields, development of the prototype website was begun.

The site, Historic Dress: The Center for the Study of Clothing, Costume, Fashion and Culture[5], is designed to become an inter-institutional center for cross-disciplinary study of historic clothing (**Figure 6**). In addition to costume history scholars and students, other potential users are historians and scholars of material culture unfamiliar with historic costume who need information and instruction to be able to study this kind of material culture. The working group convened three different focus groups during the 2013-14 academic year, meeting with librarians, archivists, curators, collection managers, and faculty from across the Pioneer Valley in western Massachusetts. These meetings made it clear that the desire to teach with material culture, like costume, is strong, but existing resources are insufficient. Participants had many ideas for ways that digital collections could help to fill this gap. The group envisions a site that features information about and images of extant clothing and provides refined tools not only for searching and browsing but also for interacting with content.

After the CSA panel presentation on this subject, scholars, curators and archivists from the audience enthusiastically shared their own requirements and frustrations. Their input underlined the similarities in the needs throughout our community, helping us to continue to collect data on how our digital resources could be used, and by whom.

How Do We Create Access To Our Archives?

In order for our users to be able to easily access our images and information about artifacts via search engines such as Google, it needs to be in a standard format. A system for management and sharing of collection objects can be determined by what type of data we collect and record and the rules we apply to that data. In digital systems, the information we include in a catalog record about an object, image, or document is referred to as **metadata**. The set of rules and descriptions used for cataloging is called a **metadata schema**: this determines the format used to describe both the contents of a catalog record as well as the structure of the record. Multiple sets of metadata elements may be combined to create an **application profile** for the particular archive that, if the elements of a metadata schema follow certain standard formats, can help search engines, such as Google, find data on the Internet.

Key to sharing data is adopting data and image standards that are agreed upon by the community with which you intend to share. Dublin Core (DC) is an acknowledged standard in metadata design and best practices across several communities, which can be customized for historic costume. Its fifteen elements provide the guidelines for creating data fields for an archive's record to best describe the most important components of a historic costume object, i.e. title, creator, date, etc. These guidelines were determined through consensus by an international, cross-disciplinary group of professionals from various fields of scholarship. DC can be used for anything from a book to a photograph to an artifact (like clothing) to an audio or video recording.[6] This allows diverse kinds of objects to exist within the same system, for true multi-media research. It also enables the potential for historic clothing to be integrated with other archival materials and for clothing artifacts from multiple collections to be joined together. Most current database systems are based on, or mapped to, the DC standard.

Kirkland is in the early stages of developing CostumeCore, an application profile that translates concepts between different collections by mapping the customized core fields.[7] It is grounded

in several different well-established standards including Dublin Core and Visual Resources Association (VRA) Core,[8] and guidelines from *Cataloging Cultural Objects*.[9] It is also based on Marcia Lei Zeng's study applying Dublin Core, MARC, and VRA Core standards to costume artifacts at Kent State.[10] **Table 1** shows some of the elements from CostumeCore mapped to the records of the four collections discussed in this article. Several optional elements that are specific to collections of costume have been added to the DC elements by the projects discussed in this paper, allowing for advanced sort and search capabilities within our community. DDM uses the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which incorporates the standards of DC and expands those technical specifications to allow objects from multiple institutions to exist side-by-side in a shared digital collection. The OAI-PMH protocols allow for searching for an item by descriptive fields like object title, object creator, etc., or by the collection to which the object belongs.[11]

A Common Terminology for Describing our Collections

A foremost consideration in creating access is how to describe the historic costume object with language that is meaningful to both cataloguers and searchers of our collections. **Controlled vocabularies** are used in systems design to reduce the ambiguities of human language. One of the major issues the Fashion2Fiber database encountered over the course of their project was the lack of consistency in language used to describe the parts of clothing: collars, sleeves, etc. Initially, the plan was to follow the definitions set forth in Fairchild's *Dictionary of Fashion*[12] as an industry standard, but the developers realized that Fairchild's definitions were not always consistent with those set forth by Mary Brooks Picken in her *The Language of Fashion* published in 1939,[13] nor her *A Dictionary of Costume and Fashion: Historic and Modern* from 1957.[14] Neither were Fairchild's definitions consistent with terms for garment parts used in pattern-making and/or sewing books. When possible they sought consistency among sources or the most objective terms available. Inconsistent terms used in data entry result in incomplete search results for users. This is definitely a problem that we need to research and standardize as a community.

When data are in **free text**, text without a given structure, computers and search engines respond to it other than to search for exact phrases. When data are structured, these same machines can perform powerful searches and filter out irrelevant items. **Linked Data** is the term for a method of using specific structures for our data so that computers can see relationships between items and concepts.[15] When we share our content as structured data, such as from a database, and take advantage of controlled vocabularies, we can use special formats to tell search engines like Google exactly what the content is about, which allows the engine to more narrowly focus people's searches. For historic clothing, this could include the ability to search by structural characteristics, such as waist level or neckline shape, which could help us to better see both expected and unexpected patterns over time. The search could also be filtered by the class of the wearer, to quickly get to items worn by the working class, for example, or by other such factors. Provided participants are using a common shared system of structured data, such as from a database, structured data can help us to relate all of our costume objects to each other.

Many costume archiving projects utilize an alphabetized drop list of fashion category terms familiar to costume historians for classification. This works well for data entry and search by costume professionals who are familiar with the terms but presents problems for the non-expert, which can include fashion enthusiasts, anthropologists, sociologists and historians. For data entry the DDM provides a hierarchical thesaurus, in a cascading drop list, that incorporates the International Committee of Museums (ICOM) Vocabulary of Basic Terms for Cataloguing Costume classification.[16] It is a hierarchy of body coverings to describe a garment by defining it first as Women's, Men's or Infants', then as Main, Outerwear, Underwear, etc. and then by placement on the body, i.e. covering the body above and below the waist, covering the body above the waist, etc., then drills down to historic dress terminology. To this hierarchy we have added contemporary fashion terms, where applicable, at the granular (lowest) level (**Figure 7**). All levels of the hierarchy are documented in the record. When the record is viewed, the classification field can be expanded to show the entire hierarchy. The category for the Madeleine Cheruit in **Figure 8** is Women's>Main garments>Covering the body above and below the waist>Dress (1) one piece>Evening gown. When the category term is entered during data entry, the entire thesaurus can be drilled through and a term on any level of the hierarchy used to define the category. In turn, the evening gown by Cheruit will be among the items returned from a keyword search on the website by entering any parent (higher level term) or child (lower level) term within the hierarchy of that particular object term, including siblings (synonyms). 'Women's Garments', 'dress', 'dress (1) piece', 'evening gown' and 'evening dress' will all return the Cheruit evening gown, as well will a search by the designer's name. This supports access by users with various levels of costume category expertise.

Vocabulary is significant for one important need of users of the HistoricDress project: assistance in dating undocumented garments. A helpful tool, developed by Pamela Schlick and published in *Dress* in 1983,[17] can be utilized to help scholars and students learn to recognize important details of garments that can indicate construction methods. She developed a decision tree offering choices of construction and shapes until one could date a garment within a five-year period. This useful tool works well, as long as the user knows what Schlick means by a "natural waist" or "narrow shoulder width." A single mistake interpreting one of these features can skew the outcome. As a result, the HistoricDress project also recognizes the need for a controlled vocabulary or hierarchy of search terms relevant to the dating of women's clothing: shapes of necklines and sleeves, lengths of waists and sleeves, fullness of skirts whether gathered or pleated, patterns of textiles, materials used in the garment, trims, etc.

When considering vocabulary choices, HistoricDress aims to develop visual representations of variations, organized so that if the user does not know the name of the style or cut, s/he can identify the style from a range of illustrations, also indicating synonymous terms. When approaching an undated object, if a user can identify as many details as possible, and search for documented/dated garments with the same characteristics (**Figure 9**), the user can narrow down the range of dates to a decade, five years, or even a specific year.

Many collections have created customized vocabularies and authority lists of fashion and costume makers based on their own local collections, and these could be very valuable if shared with the greater costume history community so that a wider range of terms and synonyms could be identified and evaluated for community use. We may even find that we are

positioned to contribute terms and structure back to existing popular vocabularies that are currently insufficient for costume terms, such as the Getty Art and Architecture Thesaurus (AAT)[18] or Chenhall's Nomenclature,[19] to improve them for their wider communities.

How Can our Digital Images Enhance the Archive?

The DDM project determined early in development that, with the time spent to properly dress and light the gowns to be imaged and the money spent on the photographer, every effort to capture the highest quality image should be made. Quality archival images capture the object in time and space, before the effects of time and atmosphere degrade the historic object. The guidelines for photographing Historic Costume from the International Council of Museums (ICOM) have been followed[20] and the image standards of the Museum Online California Archive (MOAC) were incorporated. [21] To fulfill the audience request for multiple views of the costume, the dressed mannequin was placed on a rotating rig and photographed from 18 views, and those images were stitched into a **QuickTime Virtual Reality (QTVR,** also known as an **objectVR)** file**.** The resulting interactive digital format allows users to rotate in panorama and zoom in upon details of textiles and construction of an object. Following Drexel's lead, OSU and Vassar also use such multiple high-resolution images to present **objectVR**s (**Figure 10**).

In digital collections, the term **surrogate** refers to a digital representation of a physical object. In *The Technical Guidelines for Digitizing Archival Materials for Electronic Access*, the National Archives stresses sustainability in defining their approaches for creating digital surrogates for facilitating access and reproduction of museum and library holdings.[22] The chart in **Figure 11** shows how the standards adopted early on by DDM still match the current standards of the National Archive. This level of quality insures our images can be successfully repurposed as high quality print and web output (**Figures 1 and 8**).

Portal Sites - Features to Enrich Future Costume Research and Scholarship

It would be ideal to sit at a computer and search across collections of historic clothing throughout the world on one site, and better yet, compare and contrast items based on criteria that are very specific to historic clothing. Search engines like Google only provide some of this capability, with idiosyncratic search results. The authors concur that the richest research environment may instead be achieved through the development of **portal** websites. One excellent example, WorldCat,[23] brings together books from all over the world. Portals collect content from other places, allow people to search and browse through it, and then drive traffic back to the original sources for more detailed views. Another exciting new portal is the Digital Public Library of America (DPLA),[24] which follows in the footsteps of Europeana.[25] Content is collected from libraries, archives and museums throughout the United States and Europe: not just text-based work but a large amount of multimedia, photographs and artifacts. As a result, clothing can come up in a search next to books, letters, and photos. Digital Dress, collaboration mainly between Wayne State University and The Henry Ford museum,[26] was a pioneer in providing this ability to search across four different costume collections.

Small collections may have only one instance of a particular designer, type of garment, or mode of construction. However, a community portal for digital collections would enable research across geographical and physical limits, allowing multiple collections to fill gaps in the collection

of others. It could include examples of high and low material culture, those in perfect condition as well as those showing their age and hard use. Open access to a wider sample set allows scholars to more easily provide evidence for theories, but also broadens the evidence that disproves a theory, important elements in the current landscape of dress scholarship.[27] The Digital Public Library (DPLA) has potential to provide a foundation for a robust portal for historic costume research. What is needed to be successful is that the data we structure must be compliant with the DPLA standards, which in turn follow the international standards discussed above.

A costume history portal could provide advanced digital tools specific to the needs of research in our field. For example, the HistoricDress project has been exploring the idea of digital workspaces where users could collect images and data from different sources and organize them into groups to compare and contrast the variations. They refer to this tool as a ”sorting table” like the light tables many of us used to sort out and order our slides for lectures, rearranging groups to match our needs. Another tool would provide instructions regarding the dressing of historic garments on mannequins for exhibits and photography. There could be links to sites that offer guidance regarding basic conservation methods as well as guidelines for photographing garments in high resolution and from different perspectives. There could also be tools that assist with our archiving processes: how objects are cataloged, what vocabularies are used for description, how we work with both digital and analog systems for all stages of documenting and preserving our objects. The goal would be to protect and preserve the objects while also providing digital access to garments to a wide audience.

An additional feature would be a visual thesaurus: an organized collection of graphic representations of examples of garment types and features, and recommended individual descriptive terms. This would be utilized for choices in vocabulary terms, as discussed above. Anne Bissonnette began such a pictorial glossary while she was curator at Kent State, but with changes in website design this glossary was removed. Included in the ICOM thesaurus are thumbnail sketches of silhouettes representing its terminology. The OSU project incorporates a visual glossary for many terms they use. Expanding upon this tool, a student could find definitions and examples of various objects of dress, with photographs of extant examples in different collections, for example, images printed in *Godey's Lady's Book* as well as period photographs showing them in use. A scholar of Victorian literature could find examples of bombazine fabric and mourning handkerchiefs. A curator of paintings and photographs could find clues to help confirm or challenge the date of a portrait. The visual representations could be used to create a style timeline, expanding versions developed by a few larger museums. This would be especially useful for beginners in the field to recognize some of the features of dress in different eras and connect these styles with other events and art from the same period.

In most cases there is no single free source for digitized versions of all the issues of most useful historic fashion magazines, but by collecting links across multiple free sources, access to an entire run of a magazine could be made available. The HistoricDress project is already collecting links to digitized resources such as *Godey's Lady's Book*[28] and wants to establish a platform to share these links, along with others to old catalogues, to dated daguerreotypes and photographs showing how clothes really looked, and to technical manuals about textile manufacturing to illustrate the production process.

These tools might offer another important benefit. If we can provide instruction, resources and contacts for anyone working with historic clothing, we might underscore the value of these collections, however modest. Textiles and clothing are expensive to store and difficult to display. Space and volunteers are limited, and it is tempting to sell off a group of clothes deemed too expensive to maintain or too plain to keep. But if these pieces are photographed and put out for study along with known data about the wearer, a researcher is more likely to find them and identify their larger significance. Once these objects are sold or discarded, their provenance is lost and the understanding of our individual communities is impoverished. In the worst-case scenario at least a digital record could live on.

Finding Suitable, Sustainable, Affordable Technology

The conversations that ensued after our presentation at the 2014 CSA conference in Baltimore shared a common tale of woe: a widespread lack of digital systems and related resources to capture the type of complexity we want to document about our collections of historic clothing. Some collections have no digital systems, and still rely on paper cards or files for their documentation. Some have digital systems that are outdated or severely limited. All express concern that they share systems designed not just for clothing but also for other types of objects.

The four projects discussed have used a variety of existing, off-the-shelf, custom designed and open source software to organize and display their content. When the DDM project began, available off the shelf software was expensive and did not support the QuickTime movies (objectVRs) we were implementing to fulfill our user requirements of multiple views of the garment and details of construction and embellishment. Like many in our audience, our records were still on 3”x5” paper cards. Since we were “lucky” enough to have not inherited a legacy electronic system, our project had the added appeal of being able to be designed from the bottom up as a model of digital archiving. We also had the resources of the College of Information Science and Technology at hand as Martin was pursuing an MSIS there. All aspects, from naming convention, to ontology, to relational database, to image capture and to interface design have been researched and addressed in the design to date. This structure served us well until 2012 when we decided, because of advances in technology and implementation, to look at a systems update using Open Source software. Open Source software promotes universal access via a free license for the product.

Key considerations in choosing an Open Source system for a digital archive are defined as archival collection tracking/management, finding aid creation support (partial), digital object creation support, and integrated web publication features.[29] Spiro's report for the Council on Library and Information Resources on the advantages, disadvantages and quality of various collections management systems identified CollectiveAccess (CA) as an appealing choice.[30] Users reported ease of use, ability to link objects to people to places to events to exhibitions, easily customizable forms and interface, database dynamic to website, good authority control, built in geo-referencing capability, and built in tools for digital image and audio files.[31] If you are working with a programmer, there are forums, a wiki, and a bug tracker to support implementing CA.

Working with the CA team, we developed an application profile, which matched the elements of our OAI record. The profile made mapping our existing elements to CA exact and migrating the images and data relatively easy. Our initial database interface was divided into registry information, descriptive information, and ownership history sections. Using CA we were able to expand the sections to also include media, geo-referencing, relationships, and summary sections (**Figure 12**). We are able to manage and edit lists and vocabularies, teams, preferences, displays, sets, assets, etc. through the interface. Within this function we can view our controlled vocabulary, add and edit terms and assign them parent, child and sibling status. Entity lists of designers, donors, owners, and manufacturers are established and their relationship to the object defined. From these definitions one can see complex associations not apparent in other database structures. CA also has an extensive list of media file types supported by the system. This will allow us to include ongoing experiments with mixed reality representations of historic fashion to be included in the database.

At OSU, Dr. Kathryn Jakes, professor of textile science, began developing the Fiber Reference Image Library (FRIL) in 2003 (**Figure 13**) with support from the National Park Service and the National Center for Preservation Technology and Training.[32] Jakes established the site on OSU's MediaManager software managed by its College of Arts and Sciences[33]. MediaManager uses ColdFusion as its website development platform. It has imaging and metadata capability, allowing users to create a database with images. ColdFusion was originally designed to make it easier to connect simple HTML-based webpages to a database. MediaManager also seemed like the ideal place to house the historic costume collection images: an online platform already in existence on campus without having to re-invent the wheel. A simple image gallery site was set up organizing the images into artifact and exhibition categories.

This worked until the university decided to no longer pay for MediaManager and its continuing upgrades. All users, including the HCTC, were directed to seek other platforms to house their sites, leading to searches of alternative open source software. All software programs evolve over time, sometimes to the point where justifying the expense of continuing with a particular proprietary version is no longer reasonable, forcing one to look elsewhere for an alternative framework. An advantage of MediaManager is that it is easily exportable in an Excel format so that one doesn't have to re-enter data on which a significant amount of time has already been spent. The name of the website can remain the same so that visibility is not lost, but the look of the online database will change to conform to the new software format.

The HistoricDress project and Vassar have recently been using Omeka as a content management and web publishing system. Omeka is open-source software: free, but requiring funding for staff and other services for installation and maintenance, such as a subscription to a hosting provider.[34] Projects that can't provide their own hosting can use Omeka.net, which has a free plan for hosting small projects and a yearly fee for larger projects.[35] The Omeka database structure is based on Dublin Core, but allows additional customized fields for different item types, allowing for the incorporation of more CostumeCore fields. This combination creates the needed balance between consistency across all item types but also specificity within the records for each type. The cataloging of a dress, a photograph of the donor wearing the dress, a letter from the donor, and a video of a student showing conservation of the dress are all in the same system and all linked to each other.

The comprehensive list of types of media able to be uploaded into both Omeka and CA includes all commonly used standard image, audio, video and multi-media formats.[36] Using Omeka, multiple images and related documents, audio, or video can be represented in a digital exhibition in custom layouts to portray a curator's particular interpretation (**Figure 14**), but each item also exists in its own right in the database. Therefore, from the exhibit a viewer can click on the item and be taken to its record in the database, to see additional and more detailed information about it that is separate from the exhibition. This relates to an important concept that John Unsworth has referred to as how digitization "externalizes interpretation," allowing viewers to consider a digital surrogate of an artifact in multiple contexts and form their own conclusions.[37]

The authors advise collections with no formal electronic system to keep their data in a spreadsheet format, following the DC record standard. This will allow the data to easily be migrated into purchased or Open Source software and be shared with other systems. For example, Vassar's project started as an Excel spreadsheet and then moved into a homemade Filemaker database before moving to Omeka. The Smith collection also had roots in a Filemaker database, and is now cataloged in a Filemaker based system called Snapdragon that is used for resources across the Smith campus, and then uploaded to the Luna platform for public sharing.[38] Collections with an electronic system should always have an exit strategy, exporting/backing up their records to a spreadsheet format so that data can be easily transferred to another system as necessary.

While subscription systems offered by vendors may provide valuable services for maintenance, this may come at the cost of customization, especially regarding the specific needs of costume objects. On the other hand, open source systems may not have subscription costs, but still have costs for hardware, hosting, and most importantly labor for customization and maintenance. We need to maintain an open conversation in our community about how these systems serve the needs of costume collections, and we need to provide feedback to our service providers about the features that we need for the specific nature of our work. It would benefit us all to have a set of costume history community standards for digital projects, to back up our claims with administrators.

Conclusion

Costume historians' use of technology for both organization and research has evolved significantly since the DDM's original user survey in 1999. So too has the technology itself evolved, teaching us many things along the way. As we go forward, both as caretakers of collections and researchers of historic costume, it will serve us well to use widely accepted standard data structures, such as Dublin Core and the Open Archive Initiative, for our databases. An application profile like CostumeCore can adapt these standards specifically for costume and can be a model for collections of costume history in the process of digitizing their records and imaging their objects.

Existing best practices for sustainability of multimedia digital collections can guide the creation and evolution of our costume history databases and help them to remain relevant into the future. The steps we all take now with our individual collections will determine the success of

our integrated collections in the future. A controlled vocabulary of common terms shared, understood and defined by use for all will aid both the seekers and the organizers of the information about our collections and will form the descriptive metadata that will facilitate migration of that information to future technology. This controlled vocabulary must be able to be enriched with terms and images from the expertise of all users, including those in the future. We hope this paper will help bring our community together to develop this shared vocabulary and shared metadata structure; and serve as a primer for those considering digitizing their collections. The authors encourage CSA members to contact us with suggestions and continue the conversation.

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Suggested Reading

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Tables and Figures

Costume Core v0.2 Label	VRA 4.0 XML	Dublin Core	Drexel	OSU	Vassar	Smith
Identifier	<vra: location type="repository"> <refid>	<dc:identifier>	ID | Alternate ID	Source	ID (Identifier)	Repository Number
Description	<vra: description>	<dc:description>	Descriptive Notes	Description	Description	Description
Title	<vra: title>	<dc:title>	Title	Title	Title	Title
Creator Name	<name> subelement in <vra: agent>	<dc:creator>	Designer	Designer	Creator	Creator
Date Display	<vra: dateSet> <display>	<dc:date>	Date	Decade	Date	Date
Materials Display	<display> subelement of <vra: materialSet>	<dc:medium> or <dc:format>	Fiber Content	Fiber Content	Materials (Medium)	Materials
Technique Display	<vra: technique>		Textile Construction | Embellishment	Fabric Structure	Techniques	
Measurements Display	<vra: measurementSet> <display>	<dc:extent>	Measurement		Measurements (Dimensions | Extent)	
Inscriptions Display	<vra: inscriptionSet><display>	<dc:description>	Descriptive Notes (tag and label information)		Label	
Donor	<vra: agent><role>(role=donor)		Ownership History		Gift of (Donor)	
Provenance		<dc.provenance>	Ownership History	Provenance	Provenance	
Type	<vra: worktype>	<dc.type>	Related Entity		Type	
Work Type	<vra: worktype>	<dc.type>	Category		Type	Work Type
Location Repository	<name> subelement in <vra:location> with type="repository"		Related Places		Repository	Current Location | Collection
Style Period	<vra: stylePeriod>	<dc:temporal> or <dc:subject>	Related Fashion Period	Decade	Period (Temporal Coverage)	
Location Creation	<name> subelement in <vra:location> with type="creation"	<dc:spatial>	Country of origin		Region (Spatial Coverage)	

Table 1. A comparison of some of the metadata elements used in four different existing digital collections of historic clothing, mapped to the proposed elements in an early draft for a shared CostumeCore (version 0.2). More information about CostumeCore can be found at http://ardenkirkland.com/costumecore.

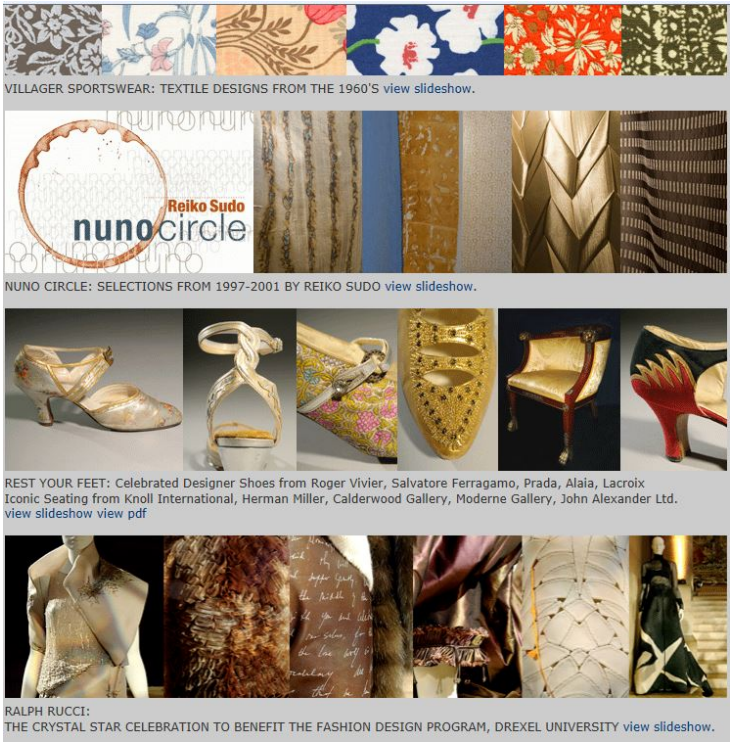

Figure 1. Gallery screen, Drexel Digital Museum Project. http://digimuse.westphal.drexel.edu/publicdrexel/index.php

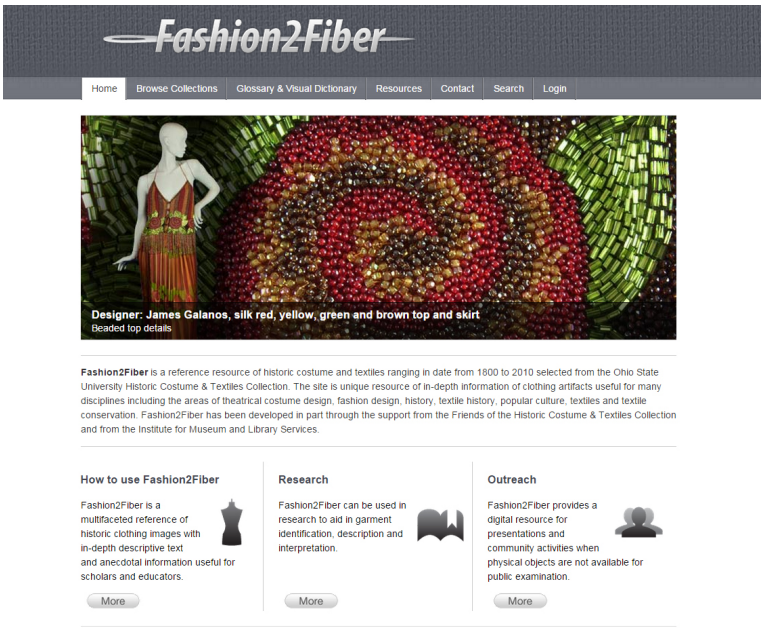

Figure 2. Screen shot for homepage of Fashion2Fiber image database, http://fashion2fiber.osu.edu. Courtesy of The Ohio State University Historic Costume & Textiles Collection.

Figure 3. Screen shot of Civil War era green cotton gingham dress from Fashion2fiber website used with IMLS funded "Teaching History with Historic Clothing Artifacts" workshops. Courtesy of The Ohio State University Historic Costume & Textiles Collection.

Figure 4. A screenshot of the Home page for website for the Vassar College Costume Collection, at http://vcomeka.com/vccc, 2014. Image courtesy of the Vassar College Costume Collection.

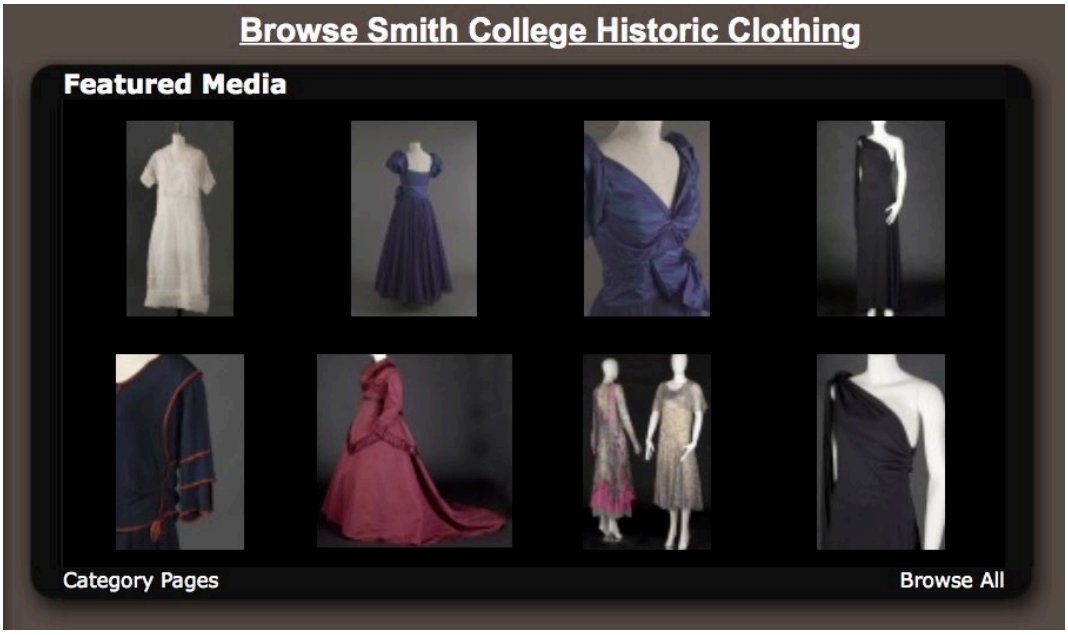

Figure 5. A screenshot of the Smith College Historic Clothing Collection online, at http://luna-insight.smith.edu:8180/luna/servlet/HISTORIC~20~1, 2014. Image courtesy of the Smith College Historic Clothing Collection.

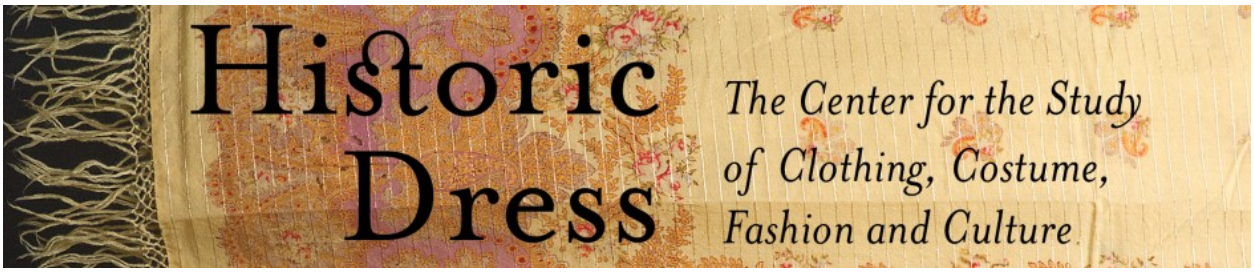

Figure 6. The banner image for the HistoricDress project. Courtesy of HistoricDress.org.

Figure 7. Controlled vocabulary hierarchy, Drexel Digital Museum Project.

Figure 8. Madeleine Cheruit. Evening dress, detail. 1924. Image courtesy of the Drexel Digital Museum Project. http://digimuse.westphal.drexel.edu/publicdrexel/index.php

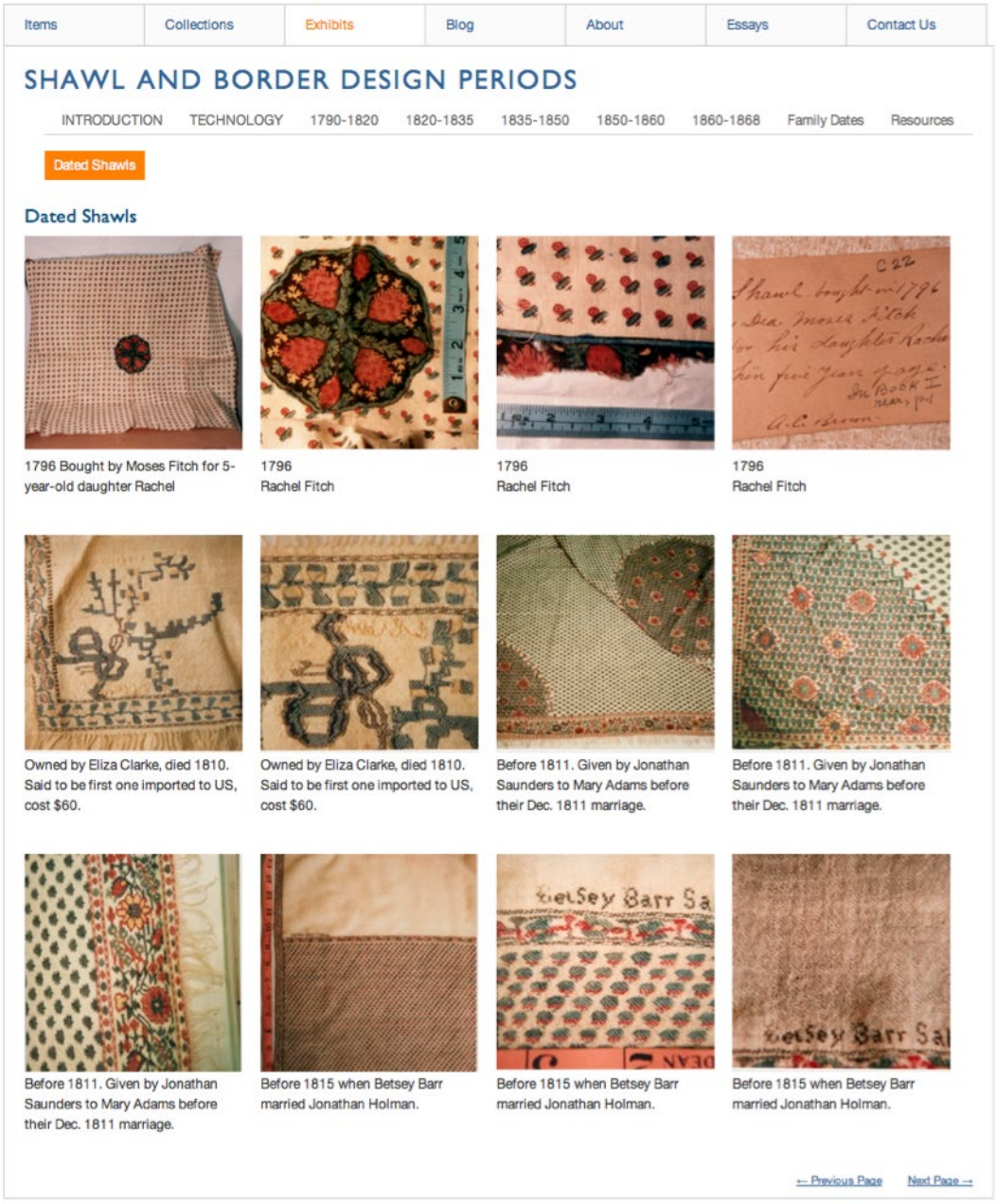

Figure 9. A screenshot of a page from an exhibit about shawls on the prototype website for HistoricDress.org, at http://historicdress.org/omeka/exhibits/show/borderdesign/docshawls, comparing examples of dated shawls in photographs scanned from Nancy Rexford's personal research archive. Courtesy of HistoricDress.org.

Figure 10. Stills from an object VR at http://vcomeka.com/vccc/items/show/2222, part of the Vassar College Costume Collection's digital collection, 2014. Object VRs are high resolution rotating views that the user can rotate or zoom in upon. Teal Dress with Cream Lace, Vassar College Costume Collection, VC2004031. Images courtesy of the Vassar College Costume Collection.

A Comparison of Archival Data and Image Standards National Archive - Drexel Digital Museum Project		
	Current NRA Standards	**DDM Standards 2000-14**
image parameter	10-16 megapixel	6 megapixel *
image mode	24 bit RGB	24 bit RGB
pixel array	4800 x 3700 pixels	4500 x 3000 pixels
alternative image parameter	6 megapixel	6 megapixel
alternativepixel array	4000 x 3000 pixels	4500 x 3000 pixels
file formats	JPEG, uncompressed TIFF	JPEG, uncompressed TIFF, TIFF/EP
color profile	custom ICC	MOAC standard
noise (other objects or patterns in background)	minimal noise	no noise, grey photopaper background
zoom	no zoom technology	no zoom technology, individual close up files
future file processing options	files stored direct from camera, minimal processing	RAW files stored direct from camera,TIFF/EP
header data	camera header data tags saved	camera header data tags saved
image stitching	source files and stitched files saved	source files and stitched files saved
		*will increase to 42 megapixel in Jan 2015

Figure 11. Image standards comparison chart, NRA and Drexel Digital Museum Project.

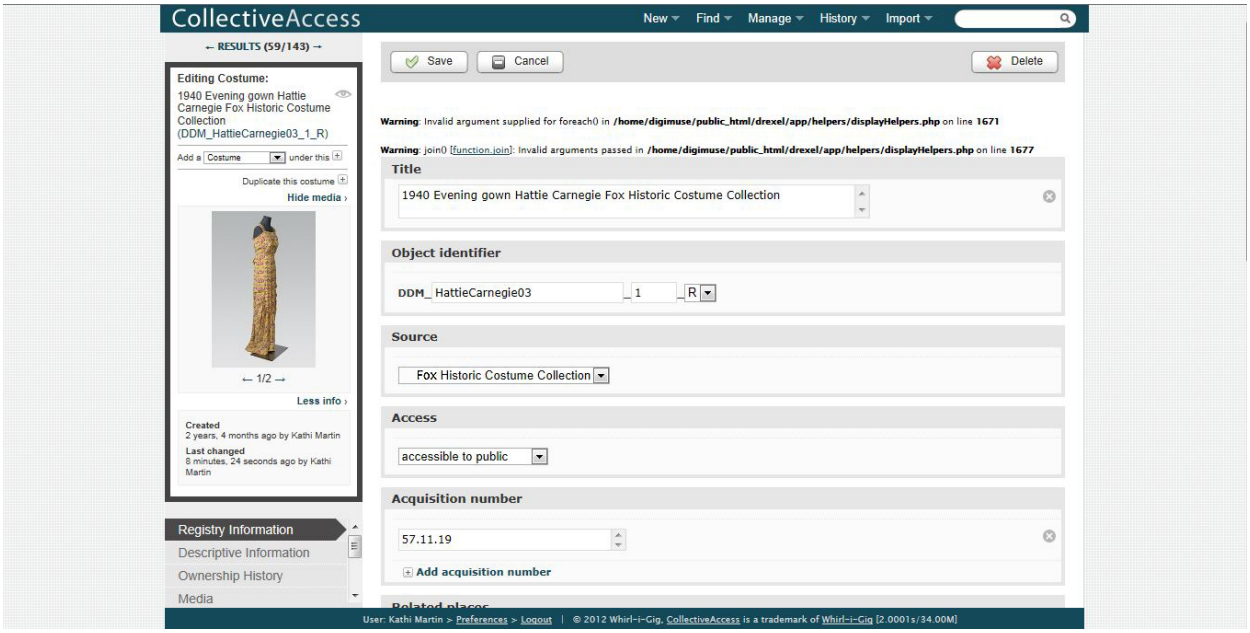

Figure 12. Registry screen. Drexel Digital Museum Project database.

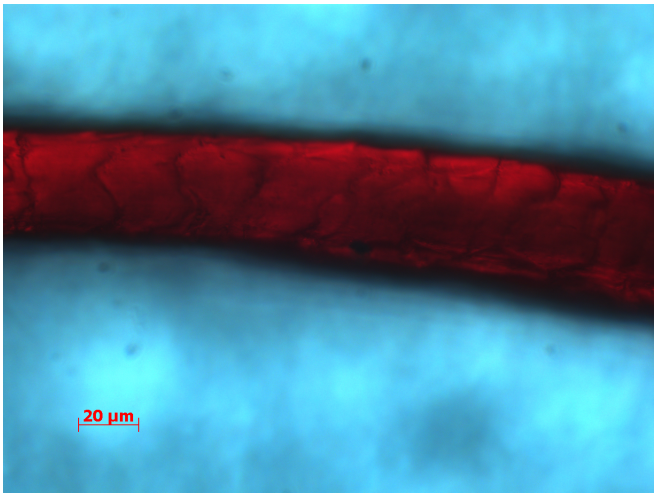

Figure 13. Wool fiber “micro” image from 1960s red Chanel suit mounted in air, differential interference contrast, 400X magnification. Courtesy of The Ohio State University Historic Costume & Textiles Collection.

Figure 14. A screenshot from the digital exhibition “For Better and For Worse,” part of the Vassar College Costume Collection’s digital collection, at http://vcomeka.com/vccc/exhibits/show/fbfw/4generations/1954, 2014. Henri Bendel, Wedding Dress of Mary Lee Hartzell, New York, USA, 1954, silk dupioni and Alençon lace, Vassar College Costume Collection, VC2007022. Image courtesy of the Vassar College Costume Collection.