This project's goal is to develop a catalog for a digitized collection of historical fashion objects held at the Kent State University Museum and to analyze and evaluate how well existing metadata formats can be applied to a fashion collection. The project considered the known and anticipated uses of the collection and the identification of the metadata elements that would be needed to support these uses. From a set of 90 museum accession records, 42 fashion objects were selected for cataloging. Three metadata treatments were created for these 42 items using (a) the Anglo-American Cataloguing Rules (AACR) in use with the United States MACHined-Readable Cataloging (USMARC) formats, (b) the Dublin Core set of elements designed for minimal level cataloging, and (c) the Visual Resources Association (VRA) Core Categories for Visual Resources created for developing local databases and cataloging records for visual resources collections. Comparison and analysis of the formats resulted in the adoption of a modified VRA metadata format to catalog the entire digitized historical fashion collection.

Introduction

This paper reports on a project that applied existing metadata formats to a university museum’s collection of fashionable and traditional costumes from the eighteenth through the twentieth centuries. The paper shares the findings with regard to metadata applications to this collection, with the goal of providing online access to the descriptions and the digitized images.

Access to most collections of historical fashion is limited by the staff available to handle these delicate artifacts and by the inaccessible nature of many costume collection storage facilities. The advantage of making representative examples of extant costumes available in a digitized fashion collection is obvious. Digital access allows researchers, students, and the public to have visual access to an entire collection without needlessly disturbing the garments and their accessories. In comparison to what limited physical access can accomplish, the digital environment can greatly enhance intellectual access to the collection (DuMont & Druesedow, 1997). Recently, data regarding a variety of fashion collections have appeared on the World Wide Web. These Web sites include collections with a regional emphasis, sites representing major museum collections, and collections of particular kinds of clothing. There are also Web sites that have images of fashion prints and commercial sites that have images of historical and authentically reproduced clothing for the purpose of the sale of garments. (Appendix A lists the titles and URLs of fashion collection Web sites). Such Web sites demonstrate highly enhanced access and use of objects in collections through digitization and network technologies.

In late 1997, the Kent State University (KSU) Museum decided to put images and descriptions of selected objects from its fashion collection on its Web site. Founded in 1985, the KSU Museum houses approximately 20,000 examples of costume and decorative arts from the eighteenth through the twentieth centuries. Fashionable dress and regional traditional dress constitute the most significant part of the museum’s holdings and form a notable and comprehensive repository of costumes. For example, its 1820–1920 American Fashion collection illustrates clothing worn during America’s most expansive period of social and political development, detailing the adoption of fashion that describes the evolution of American society. The museum also includes a collection of fur-lined Manchu robes of international importance. The museum objects carry rich information associated with history, culture, and society, as well as style, pattern, material, color, and technique.

However, while planning to build a digitized collection for these objects, the KSU Museum staff found that few repositories or related research reports examined issues that are inherent in the application of existing metadata standards to descriptions of three-dimensional objects for digitized collections. Two questions of central concern had to be
addressed: (a) for nontextual and three-dimensional objects such as fashions, do any metadata standards exist? (b) If not, which descriptive elements ought to be included in a metadata record for fashion collections?

In exploring the options for establishing a digitized fashion collection for display on the KSU Museum Web site, the author collaborated with project leaders Rosemary DuMont, director of the KSU New Media Services, and Jean Druselew, the KSU Museum director. The author’s major roles in the project were (a) to review existing metadata formats and to select one of these formats for the KSU Museum collection; (b) to augment this format as needed to meet the unique needs of the collection and its users; and (c) to prepare cataloging guidelines, examples, and a template for the museum registrar to develop and maintain the catalog for the entire digitized historical fashion collection. To fulfill these tasks, the author identified characteristics of the collection objects that require metadata treatment, including the nature of the collection objects; anticipated user needs; and constraints (staffing, funding, equipment, interoperability with institutional and community information systems/services).

Methodology

The Research Sample

The KSU Museum houses approximately 20,000 items of costume and decorative arts from the eighteenth century to the present day. More than half of this collection has been photographed and documented. Additionally, over 5000 volumes of library material in the KSU library system provide supplementary material to support the Museum’s exhibitions.

The sample for testing metadata treatment was drawn from two special collections of the KSU Museum: (a) about 80 American costumes identified for a project entitled What Americans Wore, 1820–1920, and (b) some typical items from the Manchu robes collection. In addition, 12 noncostume items, including some furniture, decorative arts, bedding, and porcelain items, were also included. The KSU Museum stores all fashion items in its warehouse. These items are usually documented with accession records or exhibition labels. Some have archival documents such as a donor’s letter or a record of an item’s exhibition history.

The prototype for the What Americans Wore, 1820–1920 project was designed to include up to four views (front, back, profile, and detail) to represent each fashion object. The three image types—thumbnail, reference, and archival (per request only)—each has different tonal depth, format, and spatial resolution. (The prototype is at: http://newmedia.kent.edu/waw99/, at the 1860 link.)

To conduct the metadata study, accession records for 90 objects and their accompanying documents and images were analyzed, and 42 items were selected for creating cataloging records. Many of the costumes contain more than one piece. For example, a female’s costume may include a bodice, a skirt, and possibly a belt; a male’s costume may include a frock coat, a waistcoat, and breeches. In the process of preparing cataloging records, the costume was treated as the object being cataloged, with necessary description notes for the components or accessories. When necessary, analytic records were also produced. Appendix B shows an example of an 1860 day-dress with bonnet and shawl that belonged to Ms. Marie Eleanor Bente. A record was created for this object in which the dress was the main piece (see Appendix C). Two analytical records for the bonnet and shawl were also created.

Although most of the study items have been photographed and many slides have been digitized, the original items—the costumes, not the images of the costumes—were used to prepare the records. The objects exist only as single objects and are not reproductions, which differentiates this project from similar ones based on reproductions or digital images alone.

Data Collection and Analysis

It was assumed in developing this online fashion collection that the cataloging format should follow the principles and standards of object description already established by information professionals. Standards not only guide how a collection is described and how individual values are normalized, but also enhance interaction and interoperability with the collections of similar institutions (Marshall, 1998). When the project started, there were several established metadata standards. They were primarily created for describing document or document-like objects, not for threedimensional museum objects. “The museum community has not been able to agree, even within a discipline, on what constitutes a core record for the description of museum objects” (Taylor, 1999, p. 97). It was essential for the project team to determine whether any of the existing standards would satisfy descriptive needs for fashion objects. Among the key questions to be addressed were these: Would it be possible to adopt and enhance existing metadata standards to accommodate three-dimensional artifacts? In this regard, did a need exist to develop a new metadata format or sets of elements? Would other kinds of three-dimensional objects also require individual metadata sets?

Literally dozens of metadata schemes were available at the time as this project progressed, ranging from popular generalized metadata formats to specialized metadata formats, including:

- Anglo-American Cataloguing Rules, 2nd ed., 1988 revision (AACR2);
- USMARC Formats for Bibliographic Data (1988 & updates);
- Dublin Core Metadata (1997);
- Encoded Archival Description, version 1.0 (1998);
- Visual Resources Association Core Categories for Visual Resources, version 2.0 (1997);
Each of these formats was constructed from an understanding of specific domains, information resource needs, and unique requirements for describing document and document-like objects. Though not particularly designed for describing non-document-like objects, each had some applicability.

In the current study, three metadata formats were examined: AACR2 in use with the United States MACE-Readable Cataloging (USMARC) format, the Visual Resources Association Core Categories for Visual Resources (VRA Core), and the Dublin Core Metadata (Dublin Core). Two local considerations contributed to the selection of these formats—compatibility and simplicity. In regard to compatibility, the project leaders wanted to ensure interoperability with related collections. Considering USMARC as one option was based on a plan to merge fashion object records with KentLINK, the KSU Library’s online catalog, and also to provide compatibility with the Library of Congress’s American Memory project, which was the original impetus for the digitized fashion collection. VRA Core was first brought to the project team’s attention by the Ohio Library and Information Network (OhioLINK), of which KSU is a member. In early 1998, OhioLINK initiated a multimedia database project and recommended that the VRA Core should be used as a record structure for multimedia content in the art and architecture domain (OhioLINK, 1998, p.2).

As regards simplicity, both the American Memory digital library project and the OhioLINK multimedia database project require that collections be easily accessible by a variety of users, without requiring special browsers or additional plug-ins. Another factor is that the KSU Museum staff had no experience with formal cataloging except in efforts to maintain an in-house dBase database for registration purposes. The Dublin Core was attractive because it enables any author of an electronic publishing product to create minimum-level cataloging records or surrogates. VRA Core’s orientation to visual resources and art works and its simplicity and flexibility also suggested that this format could be a good match for this project.

The format testing stage consisted of four steps. First, 15 costumes were selected and divided into three groups. For each group of five items, one of the three formats was applied as the primary format to create basic records. The records were then converted into the remaining two formats. As a result, each of the 15 items had records in three formats. Second, the author, a research assistant, and the museum curators analyzed the records to assess the strengths and weaknesses of each format when applied to a specific costume item. Richness of content and structural presentation in a record as well as productivity and quality of cataloging were major considerations. The museum staff favored the VRA Core. They also suggested additional elements. With the supplementary elements, the modified VRA Core format was selected for application to the entire prototype collection. (However, the decision did not represent a final judgment about which format is acceptable or not acceptable for describing fashion objects. See discussions in later sections.) Third, a modified data dictionary based on the VRA Core Categories was developed and a template for generating records was created. Twenty-seven additional items were cataloged to further test the template. Fourth, in anticipation that other union collections (such as the KSU Library’s KentLINK and OhioLINK’s Digital Media Center) might want to include KSU’s fashion collection in their databases, two format-mapping tables (from the extended VRA Core format to USMARC and to Dublin Core formats) were developed for the purpose of conversion.

Image description was considered for future exploration, because fashion apparel represented on the Web by a set of images are “reproductions” and therefore they become objects to be cataloged/described. The decision to separate or to integrate original work descriptions with the visual document descriptions remains undecided. Therefore, only descriptions of original work received consideration at this stage.

Discussion

Characteristics of Fashion Objects

Researchers have shown great interest in describing resources in the digital environment. Many have reported their findings in specific case studies, including Lunin’s (1994) “Analyzing art objects for an image database” and Kenderdine’s (1996) study of a virtual maritime museum. Record structure of document and document-like objects received extensive discussion in the Winter 1997 issue of Library Trends. In a comparison between museum objects and bibliographical materials, Will (1997) finds that museum objects often carry no wording at all. Museum objects usually offer nothing comparable to the author and title of a published work. As a result, the cataloger is unable to transcribe anything from the source. Information about what an object is called, what it is for, when and by whom it was made, all must come from external sources—either the documentation which accompanies the object, separate reference works, other experts, or the individual cataloger’s personal knowledge. Information needed to catalog historical fashion items usually comes from a museum’s accession records, documents accompanying a donation to a museum, such as the donor’s handwritten correspondence, or from exhibition notes that the museum staff generate. The fashion item itself and data pieces attached to it (such as a tag and accessories) also provide hints for description. Usually, no other recorded or printed sources for the description exist.

In a discussion of access to nonbook materials, Svenonius (1994) analyzed the limits of subject indexing for visual and aural languages. She pointed out that “to say that
‘the medium is the message’ is to assert that the form in which a message is conveyed is inseparable from its content” (p. 600). Fashion and fashion objects are often a reflection of cultural change, public values, and artistic expression. Properly displayed examples of historic dress give viewers an immediate sense of the personal parameters of an historic period. For example, the 1820–1920 American Fashion collection from the KSU Museum illustrates clothing worn during America’s most expansive period of social and political development. A successful display presents a series of images detailing the adoption of fashion that relates the evolution of American society. The collection also helps explain the transmission of fashion ideas and new clothing styles, helps identify fashion trends, examines representative fashions, and traces the influence of cultures (DuMont & Druesedow, 1997).

Because of the nature of fashion objects and their social and historical significance, each object usually had these characteristics:

- Three dimensions;
- Multiple components (removable pieces);
- Pieces of items had to be treated both integrally and separately;
- Carried information about history, culture, and society; and
- Demonstrated in detail style, pattern, material, color, technique, etc.

Object Description on the Internet: The Contents and Access Points

In her research about a virtual museum, Kenderdine (1996) pointed out that the design of an online collection should seek to embody the unique characteristics of the discipline while fundamentally transforming the way the data is accessed, presented, updated, debated, and researched. The design of an online collection should begin with an investigation of the unique characteristics of the discipline and the potential use of the collection.

A digitized fashion collection on the Web creates a completely different dynamic for a material culture collection, overcomes conservation problems, and makes these artifacts available to large (including new) audiences. Museum registrars, curators, gallery directors, art historians, art conservators, art educators, and students are likely to be the primary users of a digitized historical fashion collection. Other users may include collectors, insurers, art administrators, students in other disciplines, critics, artists, wardrobe designers for movies and plays, art librarians, editors, publishers, restorers, suppliers, writers, and the public. A major benefit of digitizing a collection is to make it more accessible to this wide range of users. Nevertheless, digitizing is not merely an appropriate and desirable alternative for museum exhibitions. The ability to search and browse the digitized collections through various access points will greatly enhance knowledge and use of the collections. To a large extent, many museum Web sites have achieved the goal of serving as an alternative for museum exhibitions. Images of costumes are usually displayed or linked with curators’ prefaces or notes. In most cases, it is the explanatory material that ties the diverse pieces together. On other occasions, materials are arranged chronologically or geographically, or are grouped under broad categories, while images are accompanied by various kinds of surrogates. Few of these Web sites, however, provide searching options in addition to browsing options; therefore, the power of searching through different access points according to various needs has not been efficiently realized. The weaknesses of lacking search functions and support for evaluation and analysis have to be overcome.

An examination of fashion collection Web sites suggests some of the reasons for such weaknesses and limitations, which are largely related to the role of surrogates in resource discovery. Surrogates are cataloging/indexing records that describe the actual resources and inform the user of how to access the objects themselves. Surrogates may be richly detailed in their identification of significant object attributes and relationships, or be so brief that their primary function is to indicate the existence and location of an object only (Younger, 1997). Among the problems observed were these:

1. Most of the Web sites lack structured surrogate records; hence, there is no foundation for building a searchable collection;
2. Web sites that use a structured format to form textual surrogates do not seem to have followed a format consistently, while the types of information included by the surrogates vary from item to item and from collection to collection;
3. Content presented in the surrogates is often only an online version of exhibition labels or captions of costume objects; and
4. Information contained in the surrogates is not fully searchable. It seems that the surrogates and search mechanisms within the same Web sites were not designed or implemented coordinately. For example, the Museum of Costume of Bath, England (http://www.museumofcostume.co.uk/), has included very useful elements in its records, such as color, sex, technique, material, pattern, and provenance, but none of these were searchable as of January 15, 1999.

Realizing the common weaknesses of current digitized fashion collections and some of the causes, the author delved into an analysis of related projects and research to identify the elements to be included in a catalog record. It is always a formidable challenge to determine how to verbalize the contents of three-dimensional objects, how to choose particular aspects of these objects to index, and how to interpret the subject matter that these objects represent. Hastings conducted a study in 1995 on research queries posed by art historians to an art-image database. In order of frequency, the major classes of queries were Identification,
Subject, Text, Style, Artist, Category, Comparison, and Color. Jørgensen (1996) used previously identified attributes to create a template for image description. The attributes were identified as perceptual (responding to a visual stimulus, such as color or object), interpretive (requiring knowledge or inference, such as style or atmosphere), and reactive (responding on a personal level; for example, linking the image). In her discussion of image retrieval, Layne (1994) indicated needs for empirical research into attributes other than subject and the traditional author and title that would be useful as access points. She divided attributes of images into four categories: Biographical, Subject, Exemplified, and Relationship. Lunin (1994) listed 24 fields that are relevant for a database describing fiber art. Special fields included technique, structure(s), theme, style, period, color(s), dyes used, texture, decoration, surface embellishment, design, provenance, and exhibition history. As Taylor (1999) summarized, a single museum record “has many more fields than does the usual library catalog record. Some fields that might be needed for art objects that are not used in libraries are: Material content, Technique(s), Studio of origin, Type of equipment used, Color(s), Texture, Design symbolism, Provenance, Exhibition history, Installation considerations, Appraised value, etc.” (p. 10).

Many fashion museums’ Web sites keep interesting biographies for their collection objects. These biographies are often important because from the “birth” of an object to its “travel” between different owners and with different exhibitions, often notable characters and stories arise. However, outlining the history of an item is not enough to meet the needs of primary users of this digitized historical fashion collection. Denoting a fashion item’s style, fabric, pattern, technique, and measurement will provide a foundation for identification and comparison between fashion items and also for inducing and deducing the generalizations, principles, and consequences that relate to fashion objects. Information about the function and construction of a dress will speak to the impact of fashion on behavior. With additional indicators of temporal and geographical significance, these characteristics also will further our understanding about a particular culture and/or society, and help in identifying cultural influences in the fashion history. To satisfy researchers’ interests of abstraction and classification, it is necessary to provide history, cultures, and additional background information. To support interpretation at this level requires presenting meaningful terms, known as “subject terms” or “subjects,” which indicate the social and cultural context in which an individual object was produced, as well as narrative descriptions. Subject and topical terms, proper names, temporal and geographical information are indispensable in research and learning. Also, these elements amount to natural links to tie together the diverse items in this or other collections. Along the lines of AACR2 and USMARC format, these necessary elements for descriptive and interpretive can be categorized into descriptive information and subject information. Given that a museum’s accession record usually contains an object’s biography, the author intentionally set up three categories:

1. Registration Information, which includes accession information, nature of the item, patent information, credit, source/donor, mode in which the item was acquired, primary designers and manufacturer, owner(s), dates, exhibition history, etc.;
2. Descriptive Information, which includes information about a costume’s type, style or particular influence, accessories and parts, dimension, dye(s), fabric, pattern, surfing and technique; and
3. Subject/Topic Information, which includes subject terms that indicate the function of a costume, its primary cultural influence, its period of fashion design, and notable terms beyond a general description.

In addition, KSU Museum curators suggested that records provide interactive links to other sources of information, such as hyperlinks to other related records about parts, accompanying pieces, and accessories, and hyperlinks or pointers to citations or other forms of references related to the object being described.

The set of resulting elements is shown through a sample record in Appendix C. Some of the elements may be necessary only to meet higher level users’ expectations. Whether the considerations above could be applied to other fashion collections, or to other types of objects, requires future testing.

Object Description on the Internet: The Formats

The following metadata formats were applied to the selected What Americans Wore, 1820–1920 fashion items and Manchu robes items: AACR2 in use with USMARC format, VRA Core Categories, and Dublin Core. Detailed descriptive records were prepared which contain all possible information to meet the known and anticipated uses of the collection. The KSU Museum’s accession records, which are in a dBase database functioned as registry records. These records, and any documents related to particular items, were the basis for preparing new records.

AACR2 and USMARC. AACR2’s Chapter 10, “Three Dimensional Artefacts and Realia,” provides a very brief guideline for cataloging three-dimensional objects. It has been used by museums that are parts of libraries (Taylor, 1999, p. 97). Many rules in this chapter refer to other chapters that rarely use three-dimensional artifact as examples (Lynne, 1994). The USMARC (1988) formats are standards for the representation and communication of bibliographic and related information in machine-readable form. The format showed its strength in treating various kinds of notes and differentiating sources of subject terms (to be discussed in the next two sections). However, numerous USMARC fields demand a tremendous amount of work and knowledge in order to apply correctly field tags, indicators, subfield codes, and input conventions. Because no
The VRA core is intended as a guideline for developing local databases and cataloging records. It provides a template designed for a visual resources collection, such as art and architectural works. VRA Core version 2.0 (http://www.oberlin.edu/~art/vra/wc1.html) element set contains two groupings of elements, the Work Description Categories (19 elements) and the Visual Document Description Categories (9 elements). The Core includes both work and visual document information. In the label for the first subset, the word “work” refers to the actual painting, sculpture, building, or event, while the label “visual document” refers to the digital images, the slide, or the photo of the original work. Such treatment benefits the cataloging of objects such as fashion items, as well as the digitized images that represent the fashion objects. The Data Standards Committee of the VRA concluded that the Core should be flexible enough to accommodate a variety of local practices. Therefore, “users may also find the need to supplement the Core with additional elements for a fuller description of the work or visual document” (http://www.oberlin.edu/~art/vra/guide.html). In addition to its adaptability and flexibility, VRA Core is self-describing, easy to understand, easy to read, and easy to apply. The VRA Core specification provides each VRA element with guidelines, terminology to be followed, and mapping elements with other metadata, in addition to definition and syntax information. All these features made VRA Core format a strong candidate for the project.

Dublin Core Metadata (Dublin Core, or, DC). The Dublin Core Metadata (http://purl.org/metadata/dublin_core) initiative is an international and interdisciplinary effort to define a core set of elements for resource discovery. It was developed to describe what have been called “document-like objects.” The DC metadata elements fall into three groups, which roughly indicate the class or scope of information stored in them: (a) elements related mainly to the content of the resource; (b) elements related mainly to the resource when viewed as intellectual property; and (c) elements related mainly to the instantiation of the resource.

At the second DC workshop, in Warwick, England, a conceptual foundation for an architecture for metadata was established, which is now referred to as the “Warwick Framework” (Weibel & Hakala, 1998). “The Dublin Core—perhaps supplemented by additional metadata packages defined within the Warwick Framework—will be used to describe content where traditional cataloging approaches are too costly, or where there is a need to create metadata for content that is not well served by current cataloging practices” (Lynch, 1998). This statement best describes the purpose of testing DC in the KSU fashion collection. In fact, the third workshop, “Coalition for Networked Information (CNI) and OCLC Online Computer Library Center, Inc. (OCLC) Image Metadata Workshop,” attended mainly by image experts, broadened the scope of target resources to include images. The 15-element set of DC, which was published after this workshop, was modified to be less text-centric. Subject and description elements were also separated (Weibel & Miller, 1996). These enhancements are useful for object description on the Web, although it is unlikely to be applied without modification or extension for fashion description. It may still be possible for an enhancement of DC to meet the needs of describing three-dimensional objects, like those for describing images.

Description of Fashion Objects

The appendixes to this paper include an image of an 1860 day-dress, with a bonnet and shawl, and a cataloging record created for the dress, using a modified VRA Core format. Records created for the bonnet and shawl were also produced, although they are not included in the appendixes. This example demonstrates a typical case in describing a historical fashion item, from which one can see the overall considerations involved.

The following discussion presents the general difficulties in applying any one of the metadata formats discussed above to a historical fashion collection. Advantages and
disadvantages of each format in treating various cases are discussed. (Texts in double quotation marks were extracted from various museum accession records):

(1) For a historical piece of costume, the designer or manufacturer is often unknown. Therefore the statement of responsibility that is to be recorded in the USMARC 1XX field (authorship) and 5c of 24X field, as well as in the CREATOR element in both the VRA Core and DC is, in many cases, uncertain. Sometimes, in the original accession records, clues about the manufacturer exist. The original sources could come from an oral conversation with a donor, or the item itself might suggest a manufacture location (e.g., an Indian-style signature usually was embedded in a shawl). In USMARC, the 260 and 500 fields secure an entry for such information, but in the other two formats, the CREATOR element and PUBLISHER element do not necessarily support manufacture information.

(2) From the beginning there was a problem of not being able to find text descriptions from which a “title” of an item could be taken. In most cases, the Museum registrar or cataloger created a title for an item according to other elements of the description. In those circumstances, generic names (rather than titles) were assigned, using some kinds of classification terms of work types. As a result, the USMARC 24X field (title statement) and TITLE element in the VRA Core and DC are consistently supplied by generic names of work types. “Dress” is one of the few terms that have been used as the title of hundreds of dresses. Other examples of such general terms include “man’s coat,” “court dress,” “evening dress,” and “day dress.” A few slightly more specific titles discovered include “Princess-style summer evening dress”, “Summer afternoon dress,” and “Plastron bodice summer day dress.” Terms that further differentiate dresses are usually recorded in the STYLE field of KSU Museum’s accession records and are associated with SUBJECT and NOTE fields in the metadata formats.

(3) Dealing with elements regarding dates relative to a fashion item description is often not problem-free either. It is not unusual to see an accession record that contains three to four dates, ranging from the date an original work was created (usually estimated), to the dates it was worn (e.g., “ca. 1912”), purchased, or officially transferred to the KSU Museum. The USMARC 260 subfield 5c (publishing or imprint date) and DATE element of DC (the date of publication) are functional when the original item’s date is recorded. VRA Core provides two date elements: a DATE for original work description and a VISUAL DOCUMENT DATE. More likely, a visual document date would be later than the date when an item was officially transferred to the museum. Unfortunately, visual document dates were seldom found anywhere in this application.

(4) The above problems occur mainly because the museum objects are often imperfectly known at the time of accessioning and registering. In describing them, there is usually more reliance on the perceptions of the person doing the description (Taylor, 1999, p. 10). A significant amount of useful information was found in the original KSU Museum accession records. When transcribing them into the cataloging records, numerous 5XX fields in USMARC, NOTES elements in VRA Core, and DESCRIPTION elements in DC were used. Notes can relate to registration/management of an item, its description, and its subject meanings. The following are just a few examples:

- Item history: e.g., “The Dress is said to have been worn by the mother of the donor on her wedding day in 1870.” “Bought by the Princess Grace of Monaco for the Rose Ball at Monte Carlo.”
- Owner, or persons related to the item: e.g., “This dress, bonnet and shawl all belonged to Marie Eleanor Bente who married Gerhart Henry Albers in 1865... Both families had emigrated from Germany around 1844. Gerhart Albers served in the Union Army during the Civil War and acted as a translator for German speaking troops. His name is inscribed on the Soldiers and Sailors Monument on Public Square in Cleveland:” “Fan gift of Ben Frost in memory of Carolyn Frost.”
- Significance of patterns, colors, customs, etc: e.g., “On the center front of this red silk satin coat is embroidered a puzi with a mandarin duck, emblem of a seventh-degree civil official;” “A bride was considered an ‘empress’ on her wedding day, and quasi-official bridal attire often had imagery adapted from Manchu court costume, including the imperial dragon and the phoenix, fenghuang, associated with the empress.”
- Style history: e.g., “Dresses in this style, with knee-length fronts of the bodice flowing into the polonaise, are illustrated in ‘The Queen’ for October, 1871, and continue through to 1873. The applied band on the skirt appears in ‘Le Follet’ in March 1872 and ‘The Queen’ for July 1872.”
- Conservation information: e.g., “Excellent condition.”

Very often there is rich information added by the museum registrar relating to the design of a specific item, such as:

- Construction of a dress: e.g., “Black wool resist-printed with red and yellow rosebuds; high round neck, long shaped sleeves set into dropped shoulders edged with self piping, sleeve openings edged with black velvet; front opening with jet buttons, F & B bodice fullness gathered into set-in waist-band; full floor-length, gored skirt, double box-pleated into waist-band, hem-bound with horsehair braid.”
- Features of an item or its components: e.g., “Paired aprons in red silk brocade, bordered in blue and accented with white, have straight end panels with couched gold-wrapped thread long dragons and feng-huang. Paired aprons consists of two sections, each made up of a straight, vertical panel and pleats attached to a plain waistband.”
The composition of an item including its parts and related accessories: e.g., “button,” “tie,” “long sleeve,” “pleat,” “bell-coral,” “scarf.”

USMARC notes are advantageous in their capacity to differentiate various types of notes, so that control of both cataloging and searching tasks become enhanced. USMARC Fields 500 (general note), 508 (creation/differentiation), and 580 (exhibition note) are useful. Some 3XX fields are also appropriate for these types of notes; however, their subfields are rather difficult to apply and they may not be meaningful for searching. Therefore, sometimes 5XX fields instead of 3XX fields were used for easier handling. It took a significant amount of time to generate the first record by following AACR2 and the USMARC details. Later, a template of the USMARC record was generated so that records became easier to create. However, many debates continue among the catalogers consulted regarding which fields should/could be used in particular cases. A typical example relates to the question of whether a 505 (formatted content note) could be used to describe the parts of an item (such as pieces of a man’s main dress, a furniture set, or a set of porcelain). Other discussions involve using 545 (biographical or historical note), 773 (host item entry), and 787 (nonspecific relationship entry).

Furthermore, whether information in particular note fields will be searchable in a database remains a question, because many systems choose not to index the 5XX fields, or to only index one or two particular 5XX fields.

VRA Core’s strength in dealing with such object-description notes is clear. Parts of the information that USMARC 5XX fields offer also find unique places in the VRA Core record. For example, VRA Core uses these elements: RELATED WORK, RELATIONSHIP TYPE, MEASUREMENTS, TECHNIQUES, MATERIAL, REPOSITORY NAME, and REPOSITORY PLACE. The VRA Core NOTES element easily applies to the rest of the notable information. Yet, because this format does not differentiate other notes, it may influence future searching when the database becomes very large (say, for searches of exhibition notes). There is also the possibility that a record may miss data if no one suggests to the cataloger what types of notes he/she should record. Therefore, a template indicating types of notes to be recorded is necessary. A sample record in Appendix C illustrates such a template. It uses a modified VRA Core format in which NOTES fields are differentiated using some of the details that USMARC 5XX fields cover.

Dublin Core’s DESCRIPTION element allows a textual description of the content of the resource, including abstracts in the case of document-like objects or content descriptions in the case of visual resources. Though not primarily designed for the description of an object, DESCRIPTION is applicable to some parts of the fashion item’s information. However, even after using the DESCRIPTION element repeatedly, some information may not fit into a permanent field. For example, location of tag, exhibition history, and the history, role, and criticism of the object may have to be eliminated, especially when metadata information is embedded in an electronic document’s non-display section (e.g., `<HEAD>` section of a HTML document). DC’s RELATION element could be used for the information about parts/pieces of an item in this application.

Information contained in the USMARC note fields provides suggestions for additional entries in the 6XX and 7XX fields having to do with the history of an item, persons related to the item or to its owner, style history, or exhibition records. These fields provide structured access points to information about persons and organizations related to the item, in addition to the browseable note fields. VRA Core and DC lack this feature, especially for added personal and corporate body entries. From a cataloging point of view, assigning added entries to a record is time-consuming; but, from a searching point of view, structured-field searching is a very important means for satisfying user’s information needs.

The above analysis illustrates the pros and cons of using USMARC, VRA Core, and Dublin Core formats in the context of descriptions of historical fashion objects. Such an analysis in the context of subject representation is presented in the next section. Tables 1, 2, and 3 provide an overview and list the desired elements. These tables were formed based on discussions with the KSU Museum staff and a research assistant, a data dictionary designed by Rebecca Albrecht, a former student, under the supervision of the author, and the author’s experiences in examining KSU’s fashion objects and their accession records. Table 1 lists the elements in the Registration Information category; Table 2 includes those in the Descriptive Information category; and Table 3 reflects the Subject/Topic Information category. Though not an exhaustive compilation, elements from the three metadata formats appropriate for particular contents are indicated in the tables. The tables focus on content and matched field names rather than input conventions and syntax. The inclusions of the examples in matching fields are demonstrative, rather than exhaustive. Tables 1 and 2 are presented below while Table 3 is presented in the next section.

Representation of Subjects

Subject representation for fashion objects concerns two issues: (a) which elements to include for subjects/topics in a metadata format, and (b) how to differentiate the sources of subject terms.

While USMARC’s 6XX fields and Dublin Core’s SUBJECT element recognize subject-added entries, VRA Core sets up several elements to share the role of subject access points with the SUBJECT element. In the VRA Core (1997) specification, the NATIONALITY/CULTURE element is defined as the name of the culture from which a
<table>
<thead>
<tr>
<th>Desired element</th>
<th>Explanation and description of element</th>
<th>USMARC field</th>
<th>Dublin Core element</th>
<th>VRA Core element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accession number and source</td>
<td>Unique number used to identify items and the name of agency which assigns the number</td>
<td>037 $a 1986.107.0003$bKent State University Museum</td>
<td>Identifier: 1986.107.0003</td>
<td>Repository number: 1986.107.1003</td>
</tr>
<tr>
<td>Original cataloging source</td>
<td>The organization which created the original record &amp; the language of cataloging</td>
<td>040 $aKSUMS$Beng</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Language of information</td>
<td>The language of any textual information accompanying the object</td>
<td>1$100/35–37$: eng 041 $aeng</td>
<td>Language: en</td>
<td>N/A</td>
</tr>
<tr>
<td>Geographical information</td>
<td>The geographical information of the object &amp; the producer</td>
<td>043 $an-us--(for the object) 044 $aus (for the producer)</td>
<td>Coverage (spatial): United States</td>
<td>Nationality/Culture: United States</td>
</tr>
<tr>
<td>Temporal information</td>
<td>Time period of the contents of the objects</td>
<td>045 $aw4w7 (associated with the subject field) 245 $a[Day dress]: $b[female]. $f1865 045 $aw4w7 (associated with the subject field) 245 $a[Day dress]: $b[female]. $f1865</td>
<td>Coverage (temporal): 1865?</td>
<td>Style/Period/Group/Movement: 1849–1877</td>
</tr>
<tr>
<td>Work Type</td>
<td>Category of the object being cataloged</td>
<td>Leader/06: r 655 $aCostume</td>
<td>Type: Costume</td>
<td>Work type: Costume</td>
</tr>
<tr>
<td>Creator Name</td>
<td>Name of designer or creator/ maker</td>
<td>100 $a 700 $a</td>
<td>Creator:</td>
<td>Creator:</td>
</tr>
<tr>
<td>Creator Role</td>
<td>Role of creator</td>
<td>1XX/7XX $e</td>
<td>N/A</td>
<td>Role:</td>
</tr>
<tr>
<td>Manufacturing Information</td>
<td>Place, manufacturer and date. Other information about manufacture</td>
<td>260 $aOhio?: $b[s.n.], $c1865? 500 $aIndian style signature</td>
<td>Publisher: Date: 1865?</td>
<td>Role: Date: 1865?</td>
</tr>
<tr>
<td>Source/donor</td>
<td>Name(s) of individual(s) who owned or donated the object</td>
<td>561 $aThis dress, bonnet and shawl all belonged to Marie Eleanor Bente who married Gerhart Henry Albers in 1865. . . 541 $cGift; $aMiss Marie E. Albers; $d1986. 700 $aSilverman, Jerry, $e$edonor</td>
<td>N/A</td>
<td>Notes: This dress, bonnet and shawl all belonged to Marie Eleanor Bente who married Gerhart Henry Albers in 1865. . . Notes: A Gift of Miss Marie E. Albers in 1986.</td>
</tr>
<tr>
<td>Repository Name, Location</td>
<td>Name and geographic place of the repository that currently hosts object</td>
<td>535 $aKent State University Museum $bP.O. Box 5190, Kent OH 44240-0001 710 $aKent State University. $b$BMuseum 78$BSilverman/Rodgers Collection</td>
<td>Right: Kent State University Museum (<a href="http://www.kent.edu/museum/">http://www.kent.edu/museum/</a>)</td>
<td>Repository name: Silverman/Rodgers Collection, Kent State University Museum Repository place: Kent State University Museum, P.O. Box 5190, Kent, OH 44240-0001</td>
</tr>
<tr>
<td>Tag location</td>
<td>Location of Tag</td>
<td>500 $aTag sewn to center back neckline on inside</td>
<td>N/A</td>
<td>Notes: Tag sewn to center back neckline to inside</td>
</tr>
<tr>
<td>Remarks</td>
<td>The history, role and criticism of the object</td>
<td>500 $aThe dress is said to have been worn by the mother of the donor on her wedding day in 1870. Dresses in this style, with the knee-length fronts of the bodice flowing into the polonaise, are illustrated in “The Queen” for October, 1871, and continue through to 1873.</td>
<td>Description: Dresses in this style, with the knee-length fronts of the bodice flowing into the polonaise, are illustrated in “The Queen” for October, 1871, and continue through to 1873.</td>
<td>Style/Period/Group/Movement: 1870–1873 Notes: Dresses in this style, with the knee-length fronts of the bodice flowing into the polonaise, are illustrated in “The Queen” for October, 1871, and continue through to 1873.</td>
</tr>
</tbody>
</table>

* Examples derived from various records.
work originated or the name of the nationality with which the work has been associated. The STYLE/PERIOD/GROUP/MOVEMENT element is defined as terms identifying a work that associates it with a defined style, historical period, group, school, or movement whose characteristics are represented in the work. For fashion objects, these elements are very important and benefit specific searches. For example, they promote these searches: (a) NATIONALITY/CULTURE element incorporates cultural/influence information: e.g., “Indian (Kashmir),” “French,” “American or European,” “English?,” etc.; (b) STYLE/PERIOD/GROUP/MOVEMENT element specifies fashion object type and style, e.g., “train,” “court dress,” “evening dress,” or “Paisley shawl.” In VRA record, the MATERIAL element records the medium in which a work is composed; for instance, whether a textile or fabric is “wool” or “silk.” In this fashion application, all these elements satisfy both description and subject access demands. “The line between description and subject analysis is harder to draw” (Taylor, 1999, p. 11). The author and the museum staff appreciate labeling them by various attribute names instead of “SUBJECT.” As Svenonius (1994) has pointed out, often attributes other than subject are more useful in the labeling and grouping of documents for retrieval and this is especially true for nonbook materials.

Subject indexing for historical fashion items relies on more than one source of subject headings or thesauri. Four thesauri were studied for representing subject contents of fashion items. Library of Congress Subject Headings (LCSH) provides a small group of general terms (e.g., “costume”) and subject access related to geographical names, time periods, and corporate names. The Thesaurus for Graphic Materials I: Subject Terms (TGM I) (Library of Congress, 1995) provides a substantial body of terms for describing a broad range of subjects depicted in pictorial such materials, including activities, objects, types of people, events, and places. Unfortunately, art historical and iconographical concepts are not included. Because the subject indexing for fashion items leans towards “Ofness” rather than “Aboutness” (Shatford, 1986), there are not many terms in the TGM I that are particularly helpful. Art and Architecture Thesaurus (AAT) (Getty Information Institute, 1994) also offers some groups of useful terms, such as terms in the categories of Styles and Periods, People and Organizations, Processes and Techniques, and Materials. ICOM’s (International Council of Museums) Vocabulary of Basic Terms for Cataloging Costume (ICOMV), a term list developed by the ICOM International Committee for the Museums and Collections of Costume, provides many more specific terms than the LCSH and AAT. It was developed by a group of experts in the fashion and museum profession, and was used by a number of well-known museums, such as the Smithsonian Institution and the Metropolitan Museum of Art in New York (J. Druesedow, personal communication, October 29, 1997). Although it is not organized using a standardized thesaurus structure, and it has only a general grouped display, its exhaustive list includes terms useful in registering and indexing dresses and accessories of men, women, and children. It also includes terms related to textiles, household items, and handiwork accessories. Un-

### TABLE 2. Comparison of desired elements and selected metadata elements: 2. Fashion object descriptive information.

<table>
<thead>
<tr>
<th>Desired element</th>
<th>Explanation and description of element</th>
<th>USMARC field</th>
<th>Dublin Core element</th>
<th>VRA Core element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object title</td>
<td>Title of object being cataloged</td>
<td>245 $a[Day dress]</td>
<td>Title: Day dress</td>
<td>Title: Day dress</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender information of the object</td>
<td>245 $a[Day dress: $b female]</td>
<td>Title: Day dress—female</td>
<td>Title: Day dress—female</td>
</tr>
<tr>
<td>Accessories</td>
<td>Accessories of the object</td>
<td>300 $a1 item: $b: bonnet, shawl and: 773 (host item entry, for the bonnet record)</td>
<td>Description: accessories: bonnet, shawl</td>
<td>Related works: Bonnet, Shawl</td>
</tr>
<tr>
<td>Dimension</td>
<td>Dimension or size</td>
<td>300 $a1 item: $b bonnet, shawl; $c back length, 57 inches (from neck to hem) or: 340 $b</td>
<td>Description: back length, 57 inches (from neck to hem)</td>
<td>Measurements: Back length, 57 inches (from neck to hem)</td>
</tr>
<tr>
<td>Techniques</td>
<td>Techniques used</td>
<td>500 $a Black wool resist-printed with red and yellow rosebuds 340 $d embroidery</td>
<td>Description: Black wool resist-printed with red and yellow rosebuds.</td>
<td>Techniques: Black wool resist-printed with red and yellow rosebuds.</td>
</tr>
<tr>
<td>Materials</td>
<td>Primary and secondary materials used</td>
<td>500 $a Black wool resist-printed with red and yellow rosebuds. or: 340 $aScSe</td>
<td>Description: Black wool resist-printed with red and yellow rosebuds.</td>
<td>Techniques: Embroidery Material: wool</td>
</tr>
<tr>
<td>Color/Pattern/</td>
<td>Color(s), pattern, and structure of an item</td>
<td>520 $a High round neck, long shaped sleeves set into dropped shoulders edged with self piping, sleeve openings edged with self piping. . .</td>
<td>Description: High round neck, long shaped sleeves set into dropped shoulders edged with self piping. . .</td>
<td>Notes: High round neck, long shaped sleeves set into dropped shoulders edged with self piping. . .</td>
</tr>
<tr>
<td>Structure</td>
<td></td>
<td>340 $aScSe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>Number of pieces of an item</td>
<td>300 $a4 items</td>
<td>N/A</td>
<td>Notes: 4 items</td>
</tr>
</tbody>
</table>

* Examples derived from various records.
TABLE 3. Comparison of desired elements and selected metadata elements: 3. Subject/topic information of fashion objects.*

<table>
<thead>
<tr>
<th>Field name</th>
<th>Field description</th>
<th>USMARC format</th>
<th>Dublin Core format</th>
<th>VRA Core format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related person or</td>
<td>The name(s) and age(s) of individual(s) or</td>
<td>600 $a Bente, Marie Eleanor, $d18??–19??—Clothing</td>
<td>Subject: Bente, Marie Eleanor, $d18??–19??—Clothing</td>
<td>Subject: Bente, Marie Eleanor, $d18??–19??—Clothing</td>
</tr>
<tr>
<td>organizations</td>
<td>organization(s) who owned, wore and collected the object</td>
<td>610 $a Kent State University. $b Museum. $e Collection</td>
<td>Subject: Kent State University Museum—Silverman/Rodgers Collection</td>
<td>Subject: Kent State University Museum—Silverman/Rodgers Collection</td>
</tr>
<tr>
<td>Culture</td>
<td>Primary cultural influence</td>
<td>650 $a Costume $x United States $x History $y19th century</td>
<td>Subject: Costume—United States (scheme = LCSH)</td>
<td>Nationality/Culture: United States</td>
</tr>
<tr>
<td>Period</td>
<td>Time period of the contents of the object</td>
<td>650 $a Costume $x United States $x History $y19th century</td>
<td>Subject: Costume—United States—History—1849–1877</td>
<td>Subject: Costume—United States—History—1849–1877</td>
</tr>
<tr>
<td>Index terms</td>
<td>Uncontrolled terms which are not derived from a controlled subject heading system/thesaurus</td>
<td>653 $a Skirt width $a Bell shape 653 $a1860–1870$aWomen’s day dress</td>
<td>Subject: Skirt width: bell shape 653 $a1860–1870$aWomen’s day dress—1860–1870</td>
<td>Subject: Women’s day dress—1860–1870</td>
</tr>
<tr>
<td>Descriptors</td>
<td>Terms from controlled subject systems/thesauri</td>
<td>654 $a Women’s main dress$2icomv 654 $aWool$2aat</td>
<td>Subject: Women’s main dress (scheme = ICOMV) 654 $aWool$2aat</td>
<td>Subject: Women’s main dress Subject: Wool</td>
</tr>
<tr>
<td>Remarks</td>
<td>The history, role and criticism of the object</td>
<td>500 $a A bride was considered an “empress” on her wedding day, and quasi-official bridal attire often had imagery adapted from Manchu court costume, including the imperial dragon and the phoenix, fenghuang, associated with the empress.</td>
<td>N/A Notes: A bride was considered an “empress” on her wedding day, and quasi-official bridal attire often had imagery adapted from Manchu court costume, including the imperial dragon and the phoenix. . .</td>
<td>Notes: A bride was considered an “empress” on her wedding day, and quasi-official bridal attire often had imagery adapted from Manchu court costume, including the imperial dragon and the phoenix. . .</td>
</tr>
</tbody>
</table>

* Examples derived from various records.

doubtlessly, this was the most useful terminology to use, although terms from LCSH and AAT were also used as much as possible for the purpose of ensuring compatibility with other collections.

Several digitized fashion collection Web sites used their own classifications in organizing the displays. For example, The Texas Fashion Collection at the University of North Texas (http://www.art.unt.edu/tfc/) had a well-established hierarchical classification structure. The Costumer’s Manifesto by Tara Maginnis (http://www.costumes.org/) organized all costume resources according to the timeline of costume history. The capability of these classifications in indexing specific (vs. generic) identity of objects was convincing.

In indicating subject-term sources, the USMARC designates that Field 650 should be used for subject added entries according to generally accepted thesaurus-building rules (e.g., LCSH). USMARC Field 653 allows index terms that are not derived from a controlled subject heading system/thesaurus, and Field 654 allows topical subject terms constructed from a faceted vocabulary such as AAT and ICOMV. Treatment of subject term sources is available in the other two metadata formats as well: “Scheme = ’xxx’ ” can be used under the SUBJECT element in DC. VRA Core provides suggestions under each element as for which scheme(s) should be consulted. A subentry indicating sources seems to be logical in VRA Core, but no examples of the syntax were found in VRA documents. When developing a cataloging template, the author decided to indicate subject-term sources. This idea was from MARC format.

Additional Elements Suggested

The Data Standards Committee of the Visual Resources Association (1997) stated that users might also find the need to supplement the Core with additional elements for a fuller description of the work or visual document. In this application, KSU’s Fashion Museum curators suggested additional elements based on VRA Core Categories. These elements were tested in 42 records. A large-scale testing of fashion items and other types of three-dimensional objects is necessary before suggestions might be forwarded to the VRA Core Data Standards Committee. However, it is useful to share these ideas here. The suggested additional elements include:

(1) “SECONDARY MATERIALS” for trimmings (lace, beads, ribbon), or for the secondary materials of fine
and decorative arts, such as frames, mounts, pedestals, upholstery, etc.;
(2) “PROVENANCE” for the history of the object’s ownership;
(3) “CITATIONS” for published references or pictures of the object;
(4) “CONSERVATION” for a history of the object’s condition and repairs; and
(5) “STRUCTURE” for terms related to the structure of an object. For example, for a dress there could be neckline, sleeve shape, waist placement, and skirt width and length.

Theoretically, these analytical-level terms for STRUCTURE would be useful to people who consider searching these features. At least two problems remain, however. First, for different kinds of objects, e.g., a man’s suit or a painting, important components of the structure would be different. There exists no standard or popularly accepted reference tool that guides or suggests such analyses. Neither is there a thesaurus that could control the use of terms. In addition to time-consuming work, the problem of inconsistency from cataloger to cataloger would remain. Second, information about the structure usually can be found in a note field. Assuming the NOTES field is searchable, the STRUCTURE field would be redundant. In this case, the search would be based on uncontrolled keywords.

As Marshall (1998) indicated, the activity of creating metadata is not straightforward; there are always collection elements with missing attributes, descriptive strategies that fall outside of the selected standard, and new ways of accessing and using the collection that stretch the affordances offered by the recorded metadata. In Appendix C, the sample record shows a working template that has been used in the project’s cataloging practice. There are additional elements that extend original VRA Core Work Description Categories. Elements with A labels were added by the author, in consultation with the KSU Museum curators and a research assistant. Also, some details were applied to differentiate a number of fields, especially in NOTES and SUBJECT fields. These modifications do not decrease or limit the compatibility of this collection with other collections that use VRA Core format.

Mapping Metadata Elements of Different Formats

As discussed in previous sections, it was anticipated that more than one large data repository would be interested in KSU’s digitized historical fashion collection, but that each repository would require a different metadata format. As a result, mapping tests were conducted and two mapping tables were prepared for conversion from the extended VRA Core records to USMARC and Dublin Core records. At the beginning, it was thought that mapping from a more detailed format to a simpler format would be easy. However, this assumption was not correct. The VRA Core specifications prepared by the Visual Resources Association Data Standards Committee suggested mapping fields of USMARC as well, even though they were not always appropriate when applied to a fashion collection. A useful reference was Caplan and Guenther’s (1996) work, which noted problems and questions on mapping Dublin Core data elements to USMARC format.

The mapping test among the elements of the three formats encountered difficulties, such as one-to-many, many-to-one, no close match, and partial match. A software program for automatic mapping may handle some elements such as the VRA element SUBJECT and NOTES. For example, various types of subject elements in the extended VRA format can be mapped against various MARC 6XX fields, or they can all be put into DC’s SUBJECT element. But this circumstance does not ensure that the VRA SUBJECT elements and MARC 6XX fields or DC.SUBJECT are equivalent. VRA has STYLE/PERIOD/GROUP/MOVEMENTS, and NATIONALITY/CULTURE as separate elements in addition to the SUBJECT elements. The same situation can be found for the NOTES elements. Various VRA NOTES match particular MARC 5XX fields; or all of them have to be put into DC.DESCRIPTION element. However, a number of VRA elements other than NOTES also need to be mapped into MARC 5XX fields. Some elements are mapped to 5XX fields or DC.DESCRIPTION simply because there is nowhere else to put them. In other instances, one VRA element needs to be mapped into two MARC fields or two MARC subfields.

In VRA Core, several elements contained uncontrolled keywords (such as the word “American” in Nationality/Culture element). When such a term is to be converted to a MARC 650 $z subfield or a 651 field, the conversion from an uncontrolled term to a LCSH heading (such as from “American” to “United States”) needs to be considered. There is also a need for checking related fields (such as “043 $a n-us-” for the above example.) Punctuation, capitalization, and order of terms may also require changes when mapping terms and phrases from one VRA element to more than one subfield. A fuller discussion of mapping issues in a later paper will be based on continuing and larger-scale testing. It is clear that a great deal of the conversion process still requires human judgment. Both MARC and DC have fields that do not map easily to the VRA Core set.

In general, the high-level of specificity for USMARC and the high-level of generality for Dublin Core have created various mapping difficulties. Because the VRA Core allows description of both the original work and reproductions of the work in one record, Dublin Core’s orientation to document-like objects has made it more difficult to accommodate all the VRA elements.

Summary and Conclusion

Historical fashion objects exhibit rich human intelligence and knowledge, and illustrate humankind’s history through fashion styles, colors, patterns, materials, and underlying techniques and design ideas. In preparing a digital collection (a database or a Web site) to document these three-dimen-
cisional objects, a traditional method—cataloging—was employed to record the attributes of a fashion item in a structured way. The unique characteristics of the fashion objects were examined and the way the data is accessed, presented, and researched by the known and potential users were analyzed. A digitized fashion collection on the Web creates a completely different dynamic for a material culture collection, overcomes conservation problems, and makes these artifacts available to large, and sometimes new, audiences. But, digitizing is not merely an appropriate and desirable alternative for museum exhibitions. The ability to search and browse digitized collections by various access points greatly enhances the usefulness of the collections. To overcome the lack of search functions and evaluation support in current digitized fashion Web sites, users’ needs and cataloging formats were analyzed. A set of descriptive elements were identified and grouped into three categories: Registration Information, Descriptive Information, and Subject/ Topic Information. Because only a handful of digital collections of such objects exist and none of them have followed a standard metadata format, the elements identified in this project were compared using three metadata formats: USMARC, VRA Core, and Dublin Core.

Museum objects have characteristics that differ from information packages in most other environment, and these affect the description in the surrogate record (Taylor, 1999, p. 97). Existing metadata formats, such as those examined by the study, were primarily designed for document and document-like objects and for limited types of objects. They have not progressed enough to include much of the key information related to a historical fashion object. The analysis in this study reveals that USMARC’s strength is that it provides an exhaustive format for description that allows a cataloger to present various kinds of notes and differentiate various subject heading courses, but its use requires a great deal of time and professional skill. Important fields for authorship, title, and publication information are difficult to apply because the museum objects are often imperfectly known at the time of accession and registering. On the other hand, Dublin Core provides an easy application to create minimum level records. However, to apply the Dublin Core to the fashion collection without supplementing elements that are more descriptive is inappropriate. VRA Core’s treatment of a variety of specific elements matches fashion characteristics better than the other two formats. Consequendy, VRA Core, supplemented with a few additional elements and modified data definitions, was applied and was found to be the most suitable to the digitized KSU historical fashion collection. Initial experiment also showed that the extended VRA Core might also be suitable for other three-dimensional objects, pending further testing.

To facilitate interoperability with other information resources that might have used or will use different metadata formats, tables to map the VRA Core format to USMARC and Dublin Core formats were developed. The process was costly and involved many complicated cases, partially because of MARC’s high-level specificity and Dublin Core’s high-level generality. VRA Core’s principle that allows both original work and reproductions of the work be treated in one record contributed to the difficulty of mapping to metadata formats that are primarily designed for document and document-like objects. It is anticipated that mapping to additional metadata formats, such as the REACH Element Set and CDWA, may encounter complicated mapping process as well.

Fortunately, as the project progresses, there has been an increase in metadata studies. The most promising development is the syntactic foundation for Web-based metadata, the Resource Description Framework (RDF), which is now being developed under the auspices of the World Wide Web Consortium (Miller, 1998). RDF’s intention is to encourage the exchange, use, and extension of metadata vocabularies among disparate information communities. The next stage of the author’s research will follow RDF development and focus on the interoperability and compatibility of the modified VRA format with other information resources. It is gratifying to note the release of Encoded Archival Description (EAD) Document Type Definition (DTD) version 1.0, which is designed to function as both a Standard Generalized Markup Language (SGML) DTD and an eXtensible Markup Language (XML) DTD. Although the current study does not test EAD for its suitability for creating catalog records for three-dimensional artifacts, its data model and structure provide valuable insights into mapping VRA into an RDF/XML-based scheme. It is hoped that the experience presented here is valuable to other researchers involved in similar projects of metadata development and integration efforts.

Acknowledgments

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References


Appendix A. A List of Selected Fashion Collection Web Sites

(URLs last verified on February 7, 1999)

1) Fashion collection Web sites with a regional emphasis:
   - The Texas Fashion Collection at the University of North Texas
     http://www.art.unt.edu/tfc/
   - Elegance After Dark, an online exhibit of the Louisiana State Museum
     http://www.crt.state.la.us/crt/museum/ead.htm
   - Portraits of Nevada: Clothing, University of Nevada, Reno
     http://spidergram.ccs.unr.edu/unr/sb204/theatre/clothtoc.html

2) Fashion collection Web sites representing major museum collections:
   - The Museum of the City of New York Costume and Textiles Collection
     http://www.mcnyc.org/mcn/costume.htm
   - Museum of Costume, Bath, England
     http://www.museumofcostume.co.uk/
   - The Costume Institute (Metropolitan Museum of Art, New York City)
     http://costumeinstitute.org/
   - Smithsonian: Textiles and Quilts
     http://si.edu/resource/faq/nmah/textiles.htm

3) Fashion collection Web sites representing a particular kind of clothing:
   - Texas First Ladies Gown Collection, Texas Woman’s University
     http://www.twu.edu/twu/exhibits/firstladies/
   - Athapaskan Women’s Costumes and Ornaments
     http://www.cmcc.muse.digital.ca/membres/treasure/249eng.html
   - Kyoto National Museum Court Costumes
     http://www.kyohaku.go.jp/tokuten/tokuchin/other97/denk997e.htm
   - Collection Militaria—Uniforms, German Historical
Appendix B. Image of an 1860 Day-Dress with Bonnet and Shawl

Appendix C. A Sample Record

Day Dress

W1. Work type: Costume
W2. Title: Day dress—female
W3. Measurements: 57 inches (back length, from neck to hem)
A1. Quantity: 1
W4. Material: Wool
W4.1 Secondary material: Black velvet
W5. Technique: Black wool resist-printed with red and yellow rosebuds
A2. Color: Backcolor—black; Rosebuds—red and yellow
A3. Structure:
   • Neckline—high round neck
   • Sleeves—long shape and set into dropped shoulders and openings edged with black velvet
   • Shoulders—dropped shape and self-piping edge
   • Front—opening with jet buttons
   • Bodices—F & B, gathering into set-in waist-band
   • Waist-band—double box-pleats
   • Skirts—full floor-length gored skirt and double box-pleated into waist-band
   • Hem—bound with horsehair braid
   • Buttons—Jet
   • Pattern—Black wool with red and yellow rosebuds

W6.1 Creator and role (designer):
W6.2 Creator and role (manufacturer):
W6.3 Creator and role (craftsperson):
W8. Date: 1865?
W9. Repository name: Kent State University Museum
W10. Repository place: Kent State University Museum, PO Box 5190, Kent, Ohio 44240
W14. Style/Period/Group/Movement: Day dress, 1861–1865
W15. Nationality/Culture: American
W16.1 Subject (personal name): Bente, Marie Eleanor, 18??–19??—Clothing
   • Subject (personal name): Albers, Gerhart Henry, 18??–19??

W6.2 Subject (corporate name):
W6.3 Subject (topical term): Costume—United States—History—19th century (LCSH)

1 Note: Elements with W labels are from VRA Core’s Work Description Categories. Elements with A labels are added based on the suggestions of the KSU Fashion Museum curators.
This dress, bonnet, and shawl belonged to Marie Eleanor Bente who married Gerhart Henry Albers in 1865. Both families had emigrated from Germany around 1844. Gerhart Albers served in the Union Army during the Civil War and acted as a translator for German-speaking troops. His name is inscribed on the Soldiers and Sailors Monument on Public Square in Cleveland.

Black wool resist-printed with red and yellow rosebuds; high round neck, long, shaped sleeves set into dropped shoulders edged with self-piping, sleeve openings edged with black velvet; front opening with jet buttons, F & B bodice fullness gathered into set-in waist-band; full floor-length gored skirt, double box-pleated into waist-band, hem bound with horsehair braid.

Credit gift of Miss Marie E. Albers.

A Gift of Miss Marie E. Albers in 1986.

Excellent condition.

Originally belonged to Marie Eleanor Bente who married Gerhart Henry Albers in 1865. The dress is thought to have been part of her trousseau, and the shawl acquired shortly after her marriage. Donated by their daughter Miss Marie E. Albers to the Kent State University Museum in 1986.