

# MARC Applications for Description of Visual Materials

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## *Abstract*

*For over a decade, there has been an ongoing dialogue between the library and the visual resources communities concerning the adaptation of MARC formats to meet the specialized descriptive requirements of archives, museums, and art collections. The discussion has risen to a new level of intensity as visual resource collections strive for enhanced outreach and visibility via the World Wide Web. This paper will survey major areas of concern regarding the use of MARC to convey visual information, including the particular problems associated with description and retrieval of images, harmonization of metadata standards, collection level description, and so forth. It will also consider the continuing viability of MARC in light of the emergence of new data standards such as SGML and XML.*

**Keywords :** MARC formats; Cataloging of art; Cataloging of nonbook materials; XML (Document markup language); Descriptive metadata.

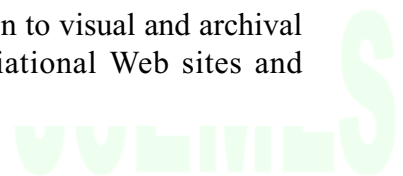
Since their development in the 1960s by the Library of Congress, the MARC formats have become a nearly ubiquitous medium for the exchange of bibliographic information among libraries, facilitating the growth of bibliographic utilities such as OCLC and a new era of cooperative cataloging. Because of MARC's success as a medium for information sharing in the library world, there has been a lively discussion over the past two decades about its adaptability to the unique and complex descriptive needs of special communities and collections: art, architecture, and slide libraries, museums, and archives. Participants in this debate wondered if it was possible to integrate searchable descriptions of artifacts, art objects, and/or their "surrogates" (slides, photographs, digitized images) into an OPAC, side by side with records for books, audiovisual materials, and electronic resources. If so, could the MARC format be flexible enough to accommodate the levels of detailed description required by these distinct communities, including the precise relationships and specialized vocabularies necessary to describe art objects? These issues have emerged repeatedly in library and information

science literature and in discussions on professional listservs such as AUTO-CAT.

Because of technological developments in digitization of primary materials and the burgeoning interest in interdisciplinary studies, I would consider these questions very important. The emergence of online catalogs and the information explosion on the World Wide Web have forever changed the face of academic research. To give an example from personal experience, I can remember the difficulties inherent in my own thesis research, almost three decades ago, on an illuminated manuscript and text by the poet William Blake. If I were to research the same topic today, I could access high-resolution, digitized facsimiles of Blake's original plates in their variant editions, with individual iconographical and textual elements fully searchable, online at *The William Blake Archive* (<http://www.blakearchive.org>).

In the networked era, researchers can consult very accurate digitized reproductions of original works and can, theoretically, search for all essential descriptive information for a non-book object encoded in what Lanzi terms a "data communication standard" such as MARC, SGML/XML, or EAD (1998, p.17), surmounting some of the geographic and access-related constraints of the past. Imagine the advantages of being able to access remotely such reference resources, books, videocassettes, cataloged museum or scholarly Web sites, and archival photographs or documents (perhaps even records for three-dimensional artifacts) on a subject such as the great San Francisco earthquake and fire of 1906, sitting side by side in the same online catalog. Such OPACs have moved from the realm of dream to actualization; a good example of movement toward such a model can be seen in the addition of MARC records for the California Historical Society's special collections, including records for visual materials such as photographs and illustrations on sheet music, to the MELVYL catalog, available at <http://melvyl.cdlib.org>. For information on this, one might refer to Patricia Keats' detailed discussion, "Cataloging Images in MARC at the California Historical Society" (McRae & White, 1998, pp.160-179). Catalogs can now include enhancements such as thumbnail images of visual materials, sound files, an 856 field link to related Web sites or databases, and so forth.

Regarding the use of MARC fields in organizing information about art objects and their representations, I discovered a wealth of literature relating to the efforts of individual institutions to adapt MARC to their special collections. I was able to locate and examine a sampling of the literature written over the last decade pertaining to MARC's application to visual and archival materials. In addition, I examined relevant associational Web sites and online catalogs.



Since there have been so many books and articles written on this topic, my literature survey cannot hope to be truly comprehensive. Rather, my intent is to outline the major themes that emerged in my research, particularly as they relate to cataloging surrogates of art objects, whether conventional (slides, photographs) or digital. I would like to give an overview of significant issues that one would need to consider prior to organizing visual materials for a collection or an institution. Finally, the bibliography will furnish an historical context for the discussion, cite seminal articles on primary themes, and indicate fruitful avenues for further exploration.

It should be emphasized that there are major differences among librarians and archivists, museum staff, and visual resources collectors regarding overall philosophy, data elements to be included, and approaches to organization; in fact, these persistent differences might constitute the primary barrier to a more universal application of MARC by these communities. Over a decade ago, in his introduction to *Describing Archival Materials: The use of the MARC AMC Format*, Smiraglia earmarked significant “physical” (1990, pp. 8-9), “intellectual” (1990, pp. 9-10), and “information-seeking” (1990, pp. 10-11) differences between what he calls “archival and bibliographic control” (1990, p. 8), and many of his observations still hold. Moreover, archivists tend to favor specialized descriptive standards (e.g., Henson’s *Archives, Personal Papers, and Manuscripts (APPM)* or Betz’s *Graphic Materials: Rules for describing original items and historical collections*) and alternative or locally-devised vocabularies (Getty’s *Art and Architecture Thesaurus* or *ICONOCLASS*).

Lanzi gives a succinct overview of the above divergences in her *Introduction to Vocabularies*. To summarize her comments, libraries tend to organize published, generally non-unique, items (i.e., books, serials, and audiovisual materials) using standards such as MARC and AACR2 with LCSH descriptors (Lanzi, 1998, pp. 10-11). Archives (1998, p. 8), museums, and visual resource collections (1998, pp. 12-13) all tend to create very lengthy and detailed descriptions of “unique” materials or their representations (e.g., slides, digital images), which can be often be expressed as both as “collection level” records and/or item records. Descriptions often include detailed, hierarchical data regarding provenance, style or genre, history and use of the item, preservation details, and so forth. Their records may also contain synopses of content, comments on “aboutness,” symbolism/allegory, and various segments or views of the item, using a variety of thesauri or even uncontrolled/local language. In her recent discussion of Version 3.0 of the Visual Resources Association’s (VRA) *Core Categories for Visual Resources*, Caplan states that visual records have “tended to be institution-

specific, using locally-defined data elements, formats, and authorities” with “a great redundancy of effort, as every institution cataloged their own collections of slides based upon the same works of art” (2000, p. 27). Standard elements in bibliographic description (title, access points, statement of responsibility) may be more problematic to determine in these materials. Can MARC hope to incorporate complex data elements required by these communities? Is it possible to harmonize different descriptive standards, facilitating discovery of materials?

By their very nature, visual materials present special challenges for the cataloger. As McRae and White indicate, they may not be “in hand” and certainly lack the convenient “title page,” or other fundamental pieces of information (title, statement of responsibility, production information) that the book cataloger can, most often, access immediately (1998, p. 5). Along with Orbach, Shatford Layne, and Svenonius, they emphasize that visual objects must be “read”—or interpreted—by the cataloger (McRae & White, 1998, p. 5). Berinstein reminds us that “of-ness” and “about-ness,” context and relationship, “historical significance” and other factors must be taken account of and somehow represented by the visual arts cataloger (1998, pp. 33-34); moreover, in her “Moving Multimedia” paper, she furnishes a fascinating taxonomy which sheds some light on the many complex uses and meanings of images.

Recent literature attests that there is a growing urgency within the archival and visual arts communities to take advantage of new technologies in order to expand the search and retrieval capabilities of academic researchers and the public at large. Fundamental philosophical differences may finally be surmounted or compromises made in the interest of providing online, digitized access to these special collections. The response of particular institutions to the issues outlined above will be as individual and varied as the institutions themselves and will depend greatly on funding, the level of sophistication of their online systems, and the professional skills and philosophy of staff members. An excellent example of a progressive institution trying to embrace new technologies and approaches in order to integrate its library, archival, and museum collections is Mystic Seaport (<http://www.mysticseaport.org/research/nf4-index.htm>).

At the outset, it should be emphasized that continual efforts have been made to adapt MARC to newly-perceived and emergent descriptive needs in art and archival collections. As Walt Crawford’s excellent overview, *MARC for Library Use*, indicates, MARC was originally designed in the 1960s with the description of book materials in mind (1989, p. 21). Due to the necessity of describing serials and other materials, it soon expanded to seven descrip-

tive formats (Crawford, 1989, p. 221; Hsieh-Yee, 2000, p. 25), including an archival and manuscript (AMC) format in 1973 (Crawford, 1989, p. 133) and a visual materials (VIM) format in the 1980s, correlating with *AACR2*'s chapters on manuscripts (ch. 4), motion pictures and video recordings (ch. 7), and graphic materials (ch. 8), but not realia (ch. 10) (Crawford, 1989, pp. 111-112). There have been ongoing discussions by MARBI as to how to expand and improve upon the formats over the years. MARBI papers are organized by keyword and by reference number at the *MARC Development* site: <http://www.loc.gov/marc/development.html>.

Significant recent changes have included format integration (1980s-1996). In his 1996 address "The Evolution of MARC Formats," Tom Delsey says this was intended "to ensure that content designation would be consistent across formats, that formats would become hospitable to multimedia materials and would be capable of reflecting 'seriality' and archival characteristics of all types of materials" (1997, p. 35). According to Hsieh-Yee, integration involved adding and removing fields/subfields (Hsieh-Yee, 2000, p. 25), using 006 to record accompanying material/other characteristics (2000, pp. 25-27), adding the 856 field (2000, pp. 221-223), and defining subfield v for genre/form descriptors (2000, p. 27)—alterations significant to the MARC community at large and the visual resources community in particular.

In recent years, MARC has been flexibly and creatively adapted to the needs of particular visual resource collections and archives. Some wonderful examples of such applications can be found in McRae and White's *ArtMARC Sourcebook*, in which representative MARC records are given, along with mapping charts by institution, tag, and category. In perusing these examples, it is interesting to note that the use of these fields might be quite different from the usual; for instance, a repeating 520 might contain narrative descriptions of various photographic view or slides in a collection. It is instructive to view the chapter on in *ArtMARC Sourcebook* entitled "Tables of MARC Mapping" (McRae & White, 1998, pp. 17-37) and MARC record samples to see how the institutions represented in *ArtMARC* interpreted and customized fields to suit their particular descriptive needs.

It might be generalized that visual object description in MARC requires a heavy use of the 5XX note fields, but there is not unanimous agreement among institutions regarding which fields should be used for which items of description. The General note (500), Summary, Etc. note (520), and Formatted Contents note (505) appear repeatedly in such records; however, other note fields are employed to carry descriptive information considered important by visual arts collections (McRae & White, p. 11). They give a

few examples of these: 561 for “Ownership/Custodial History” (i.e., provenance), 545 for “historical and biographical information about the main entry (creator)” (McRae & White, 11). Moreover, the 541 (“Immediate Source of Acquisition”) field and its subfields can demonstrate ownership details and 583 (“Action”) can give pertinent details about preservation, exhibition and transfer of the object; both fields have a subfield 3 which can earmark a “portion” or “subset” of the collection being acted upon (Crawford, pp. 136-138 and *Bibliographic Formats and Standards*, “5xx Fields”). The use of the many note fields and their subfields could constitute a study in and of itself, which is certainly beyond the scope of this literature review. However, examples in McRae, Crawford, and Peterson amply demonstrate that there is room in MARC for all kinds of information not ordinarily found in bibliographic records and for “pointers” to indices and finding aids that describe collections in greater detail.

As mentioned earlier, a great concern of the art and archival communities is the limitations of *LCSH* with regard to specificity and hierarchical arrangements of elements. In her essay “Mapping *LCSH* into Thesauri: The *AAT* model,” Whitehead cites studies by Cochrane and Kirkland, Petersen, and Markey and Vizine-Goetz which point, respectively, to “lack of specificity for particular subjects” (Petersen and Molholt, 1990, p. 81), “weaknesses in *LCSH*’s syndetic structure” (1990, p. 81) with regard to art and architecture, and lack of broad/narrow terms in a variety of subject descriptors (1990, p. 82). Consequently, it is not surprising that many museums and art libraries have supplemented *LCSH* with terms from sources such as the *Getty Art and Architecture Thesaurus (AAT)*, *Union List of Artist Names (ULAN)*, and other thesauri. A useful overview of these thesauri can be found in *Introduction to Vocabularies*. For specialized communities, a highly-faceted vocabulary such as *AAT*, which Lanzi says is based on Ranganathan’s theories, is most desirable (Lanzi, 1998, p. 32). (See *Bibliographic Formats and Standards*, “6xx Fields”, for a full description of the faceted character of these fields). MARC does have the ability to accommodate these, to some extent, in 654 (“Subject Added Entry—Faceted Topical Terms”), which contains focus/subordinate term indicators and subfield designations indicating the specific vocabulary used. Expanded subject coverage is possible by supplementing the standard 600, 650, and 651 notes with the 653 (“Index Term—Uncontrolled”), 655 (“Index Term—Genre/Form”), 656 (“Index Term—Occupation”), and 657 (“Index Term—Function”) notes. In viewing sample MARC records for art, architecture, and archival objects, it is immediately evident that the 6xx fields are also more abundant than is usual in bibliographic records.



Catalogers who would like to use other vocabularies may consult *The MARC Code List for Relators, Sources, Description Conventions* (<http://lcweb.loc.gov/marc/relators>), which supplies standardized source codes for vocabularies found in MARC records and often specifies the fields where they can be used. Oldal outlines some drawbacks of using multiple vocabularies, including the complexities of proper “maintenance” and update, “consistency and continuity”, “training”, and “systems issues” (2002, pp. 7-8). She maintains that before augmenting one’s records with other vocabularies, one should examine such important factors as indexing depth and precision, whether the vocabulary meets the needs of one’s institution, and the overall compatibility of terms from different vocabularies; other considerations include ease of use, regularity of updates, and “continued viability” of the vocabularies (2002, p. 10).

A most fascinating subset of papers analyzes the very special and complex subject access requirements for visual images. Sara Shatford Layne’s seminal meditations on subject analysis for pictures, using the framework of Panovsky’s levels of meaning in art, and similar discussions by noted scholars such as Svenonius on depth of subject indexing, are well known expositions of this theme. Can one provide subject access to images based upon a variety of attributes: their genesis and provenance, their specific and their iconographic content, their relation to other images or texts? Could topical information verging upon the emblematic and subjective realms be accommodated adequately by MARC note and subject fields? The supplementation of the standard *LCSH* by other vocabularies would most likely be necessary, as mentioned earlier. Ultimately, in Shatford Layne’s own words, the question is “which attributes **need** to be indexed, which can simply be noted in conjunction with the image, and which may be left for the searcher..... to perceive” (1994, p. 587). Eakins and Graham, in the section of their report entitled “Classification and Indexing Schemes” (1999, 4.2), give an overview of the complexities of image cataloging, suggesting that the needs of users are central to determining focus and depth of indexing. What precisely to index in images is still an active debate, made more so by recent improvements in retrieval, display, and browsing functions in databases; this is clearly demonstrated by the great frequency with which these articles are still cited in the literature today. Interestingly, with regard to vocabularies and verbal queries for images, Collins maintains that patrons seek images primarily through “generic content,” using straightforward descriptors such as proper names, time, and place, raising the question of how specialized or esoteric catalogers of visual resources really need to be when indexing images (1998, p.51).

In reading about visual arts projects in *ArtMARC*, one gets a strong impression that, in some projects, institutions “shoe-horned” their data into the MARC system, while in other cases they achieved a more natural “fit.” McRae sensibly suggests that special subfields might be created in MARC for “visual document data” and visual reproductions (1998, p. 13). Certainly, as the literature demonstrates, many modifications or supplements have been envisioned for this long-lived data communication standard to insure its viability in today’s more sophisticated networked environment. After seeing how various institutions have successfully adapted MARC to their non-book collections, one might wonder what are the most common objections raised against MARC.

For several reasons, art librarians are concerned with the way MARC handles hierarchies and the long, highly detailed records required by visual resources. In a discussion on “US MARC and Image Access Cataloging,” Davis notes that “the chief drawback to extending USMARC for access to collections of digital images was considered to be its lack of hierarchy and intrinsically flat record structure..... In addition, the known problems of USMARC-based systems in handling and displaying extremely long records was considered a major hurdle” (1995, p. 30). For information on permitted record sizes in OCLC MARC, one must consult the *Cataloging Service User’s Guide*, Section 5.2: No more than 50 variable fields are allowed and 4,096 characters maximum per record. There is also the problem of creating “collection level” records for groupings of items and then effectively linking these to individual item records, which may have very distinctive elements and histories of their own. Dunn’s article explores some of these concerns, while McRae and White suggest that some 7xx MARC fields (e.g., 774, “Constituent Unit Entry,”) may be helpful in distinguishing between groupings and individual items (1998, pp. 7-8). Archivists would share the above concerns in relation to the management of the often very detailed and layered collection or **fonds** (i.e., materials sharing “a common **provenance**”), which is absolutely central to archival practice (Pitti, 1999, p. 5). Gaynor’s fine 1996 article, “From MARC to markup: SGML and online library systems,” uses examples from various projects to illustrate the intrinsic weaknesses of MARC/ISO 2709, recommending a “SGML-based catalog”. In this format, “search hierarchies could look first for descriptive information packets (such as headers) and bring those to the user’s desktop while retaining a link to the full text, image, or digital surrogate, which could also be searched, displayed, saved and manipulated as the user wished..... [and] linked to other versions, images, or analytical files” (Gaynor, 1996, p. 19). While writers in the late 1990s such as Gaynor and McCallum (1996)



expressed excitement about the possibilities of an SGML DTD for MARC, more recent writers such as Tennant, Miller, and Fiander would emphasize a simpler subset of SGML, XML, as their markup language of choice.

Many visual resource specialists, such as Davis and McRae and White, also bemoan the fact that MARC does not allow for a clear enough distinction between the artwork itself and its surrogate, i.e., photo, slide, digitized object. McRae and White emphasize that the surrogate has its own characteristics that are distinct from the original: “[Surrogates] document an original object at a particular moment in time and from a particular point of view. The visual document contains its own temporal and spatial characteristics” (1998, pp. 7-8). Nevertheless, Caplan points out that while the Visual Resources Association’s *Core Categories, Version 2.0* agonized over the distinctions between surrogates and originals, in Version 3.0 there is a movement toward a more Dublin Core-like set of descriptors and qualifiers of a much more general nature, utilizing the “1:1 principle” popularized by Dublin Core, that a single set of metadata elements should describe a single entity” (Caplan, 2000, p. 29).

In the light of all this, one wonders how visual materials will be organized in the 21st century. Younger envisioned a “multitiered” catalog (Younger, 1997, p. 481), in which MARC would co-exist with other schemes, be converted to other formats, or “point to” other data, such as finding aids (Younger, 1997, p. 484). Indeed, today various types of linkages are possible between MARC records and EAD documents (Caplan, 2003, p. 96); in the humanities community, there has been discussion of “mapping” and “convertibility” between TEI headers and MARC (Caplan, 2003, pp. 73-74). When commentators speak of interoperability between various metadata schemes, they envision expanded options for the retrieval and exchange of information. Such an exchange might be facilitated by the “metadata mapping or semantic mapping” often graphically represented by “crosswalks”. Further explanation can be found in Woodley article, “Crosswalks: The path to universal access,” (2000, p. 2) on the Baca Website, and in Day’s mapping Web page. In converting content from one metadata source to another, there are many difficulties to overcome: establishing exacting semantic equivalencies, avoiding loss of information during conversion by establishing one-to-one correspondence between elements, establishing data hierarchies, determining where certain information will reside within a record when translating one metadata scheme into another, and so forth. Woodley, Caplan, and St. Pierre and LaPlante have all discussed in some detail the complexities of mapping information from one standard to another. With regard to visual resources, Woodley has demon-

strated that in mapping CDWA and CIMI to the unqualified Dublin Core, DC Simple lacks the “granularity” of the other schemes; this could possibly result in data loss or confusing placement of information elements (Woodley, 2000, pp. 8-10).

Some suggest that MARC’s weaknesses in handling problematic relationships such as those outline above might be best addressed by a total “reconceptualization” of both the formats and the descriptive guidelines in *AACR2* for which they are a vehicle (see Younger, 1997, pp. 475-476 and Heaney, 1995, pp. 135-153). Writers such as Heaney have, in the past, expressed the view that such a revamping of MARC is logistically, economically (and perhaps politically) unfeasible (1995, p. 152); millions of bibliographic records have been created using MARC. Other writers look toward the future with a guarded optimism about changing syntax in records. Despite her enthusiasm about the possibilities of SGML/XML, McCallum cautions that MARC has remained a remarkably persistent standard, while XML has not yet proven its “staying power” (2000, p. 55).

More recent literature extols the promise of XML as a data standard. To offer a sampling of comments, Jacso unequivocally states that “XML’s promise for Web-based information systems is similar to that which MARC held for bibliographic systems on mainframe computers more than 30 years ago” (2002, p. 18). Dorman proclaims that MARC “will soon become as out of place in the emerging universal computing environment as a Baroque balustrade on a Bauhaus balcony” (1999, p. 73). In an article with the rather ominous title “MARC Must Die,” Tennant criticizes the “granularity” of the MARC record as well as its “flat” structure, concluding that it is important not only to insure record flexibility and extensibility but also to keep in step with the data standard du jour (2002, pp. 26, 28). Miller, with the fervor of the converted, likens MARC to “a big, old, rambling, comfortable house” that one must either remodel or rebuild entirely (2000, Slide 16) while anointing XML “the lingua franca of the Information Age” (2000, p. 1) and “the de facto Internet standard for representation of information content” (2000, p. 4). He has gone so far as to state that MARC should be supplanted by XML ILSs that “foster, rather than impede, our ability to provide new and improved user services” (2000, Slide 45). Both Banerjee and Miller see XML as a means to simplify and improve searching across many platforms and formats, so that the user can seamlessly explore materials from books to digital manifestations in the same online catalog. In fact, one might view this ease of access to a multitude of formats, and linkages to many formats within a record, as being a “holy grail” of ILS developers.

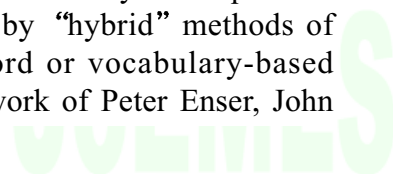
Other commentators have outlined several possible scenarios for the future. While acknowledging direct MARC to XML/XML to MARC conversions as an option, Fiander wonders about the feasibility of “a new markup based on the structure of the descriptive standards [*AACR2*], while learning the lessons of MARC” (2001, p. 23); other options include a total re-visioning of catalog entries — perhaps “a more recursive format”, a record based on IFLA’s FRBR which delineates the relationship between the work and the item, or a even a departure from the possibly outdated “concept of the ‘main entry’”, perhaps rendered unnecessary in the online environment (Fiander, 2001, p. 25). In Tennant’s 2002 follow-up to the “MARC Must Die”, a piece entitled “MARC Exit Strategies”, he discusses MARC’s difficulties with the work-versus-manifestation distinction, particularly as this affects union catalogs and virtual union catalogs, describes the Library of Congress’ promising Metadata Object Description Schema (MODS)/ Metadata Encoding and Transmission Standards (METS), and finally offers the most radical and problematic solution of complete migration to a different encoding system.

In her recent article “MODS: The Metadata Object Description Schema,” Guenther explores the current deficiencies of the Dublin Core with respect to library applications and offers the METS/MOD standards as “a better solution” (2003, p. 138). She summarizes the importance of these developing standards:

By retaining much of the richness of the MARC element set and replacing the syntax with XML and the more friendly language-based tags, MODS allows for rich resource description that is compatible with the huge numbers of MARC bibliographic records existing in library systems. In addition, as an XML descriptive standard, it provides the flexibility to be combined with other XML based standards such as METS to satisfy needs for the digital library environment (Guenther, 2003, p. 149).

In the section entitled “MOA2 and METS”, Caplan (2003, pp. 161-165) provides a more full explanation of METS as a structural metadata.

A great deal of excitement has been generated recently by experiments with “content-based” retrieval paradigms for digitized images (CBIR), in which images can be discovered through pixel-level analysis of qualities such as color, texture, shape, and so forth, and by “hybrid” methods of retrieval which employ both concepts (keyword or vocabulary-based queries) along with the actual content (see the work of Peter Enser, John

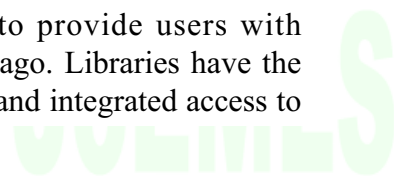


Eakins, and Robert Korfhage). Collins foresees databases which combine “thumbnail representations of images with verbal indexing schemes” (Collins, 1998, p. 53) as a preferred mode of image access in the future, allowing patrons to search not only by verbal query but also by browsing digital image surrogates; this might, in part, resolve some of the depth of indexing and vocabulary problems stated above. At this writing, online catalogs are beginning to include thumbnail images of visual materials alongside full catalog records. A local example of this trend is a representative sampling from the Feingold menu collection, added by Johnson & Wales University Library to the HELIN Consortium’s online catalog: <http://library.uri.edu/search/ftlist^bib70,1,0,114>

Even the most cursory examination of recent literature suggests that patrons seeking information regarding visual resources will be seeking more sophisticated text/image searching options and interfaces. Although MARC has done a masterful job of incorporating information needed by this specialized clientele to date, flexibility, interoperability between various metadata schema, and the possibility of establishing more elaborate and hierarchical linkages between data elements are all becoming increasingly significant. Many specialists now speak of the “unbundling” of the “structure, content, and markup” elements which we collectively (if imprecisely) refer to as “MARC” (McCallum, 2000, p. 10). Since the development of the 856 field, MARC records are more frequently being perceived as gateways and pointers to records encoded in other schemes. Mapping projects between MARC and other schema are becoming common. As mentioned before, writers such as Younger envision a “multitiered catalog” using a “hierarchical approach to descriptions of works, versions, parts and related works” (Younger, 1997, p. 480). Similarly, Vellucci cautions catalogers that they must “begin to think in terms of multischeme data registries, new record, constructs, and relational data models” and “envision a new spectrum of authority control that includes many types of identifiers along with the more familiar names, titles, and subjects” (2000, p. 42).

Despite the proliferation of articles dealing with the “death” of MARC, I believe the jury is still out on MARC’s viability. In case one should forget the importance of MARC, McCallum states:

While the MARC format is simply a communications format, it turned out to be the key standard for the development of the vast infrastructure that supports libraries today, enabling them to provide users with retrieval and other services unheard of 30 years ago. Libraries have the responsibility to organize and provide consistent and integrated access to

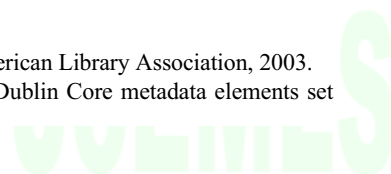


all of their resources — ancient manuscripts as well as today’s electronic documents — and MARC’s farsighted design, stability, and prompt, skillful maintenance have enabled libraries to meet those fundamental objectives (McCallum, 2002, p. 47).

MARC has already proven that it can “provide an exhaustive format for description” (Zeng, p. 1205). Nevertheless, current work on schema such as METS/MODS holds promise for greater interoperability and lossless conversion of MARC, effectively serving the expressed needs of the archival and visual arts sectors. It is still too early to assess the full impact of emergent data communication standards such as XML on MARC, but these developments will certainly be followed closely by the visual arts communities.

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