Metadata: The Magic Behind the Scenes

By Sheila Bair, Metadata Cataloger & Pam Rebarcak, Head, Technical Services

For centuries, librarians have described and organized physical containers of information—scrolls, papyri, cuneiform tablets, manuscripts, non-print media, and, of course, the printed book. Monastic librarians arranged volumes simply by size—big books on the bottom shelf and small ones above—or even by color. Later, numeric and alpha-numeric schemata married the hefty tome to the slender pamphlet. Content dictated juxtaposition on any given shelf, which thereby became, visually, that barcode of varicolored spines that modern library patrons take for granted.

But what happens when content escapes its container? In the digital library, this very eventuality has come to pass. The pages are, as it were, out of the binding or box. Only the content matters. Metadata makes it possible to find, link, and share information on a granular level regardless of its format.

Notice that we've said "metadata makes" and "metadata is." Although the purist writer or editor may still consider data and agenda to be plural nouns, many 21st century authors consider metadata to be a singular noun. So, what is metadata? The Greek prefix tells the story: it means beyond, about, sometimes behind—as in metaphysics, metapolitics, metapsychosis, and so on.

Data Behind Data

Metadata is not, however, randomly accumulated data, but rather, according to Priscilla Caplan, writing in Metadata Fundamentals for All Librarians (ALA: 2003), structured information recorded with a documented metadata scheme. Metadata is information that describes or identifies other information (or another information source). Metadata is ordered according to one of several standard schemes. Such metadata or information about information becomes increasingly valuable in a knowledge economy. Metadata is the data working quietly behind information that makes it work and enables people and systems to do smarter things. The faster and more efficiently you can get the information you want or need, the less effort you waste—and the smarter and richer you become.

Still perplexed? The National Science Digital Library Metadata Primer defines metadata as “structured, standardized descriptions of resources, whether digital or physical, that aid in the discovery, retrieval and use of those resources” (http://metamanagement.com/nnsdlib.org/overview2.html#what).

Exploding by the nanosecond, information threatens to overwhelm the frail thread of our capacity to order it. But information seekers are rarely cognizant of the magical underworkings of the database. For example:

• A book jacket image appears in the record because an ISBN was recorded in the metadata;
• a needed book can be borrowed from a library in Beijing because MARC records enable sharing of records in an international electronic union catalog;
• all the resources in a discipline or subject area can be perused because Library of Congress subject headings and classification have been added to the metadata; and
• all the works by a favorite author can be instantly called up because a standard authorized heading was used for the author's name.

Metadata makes connectivity, interoperability, searchability, accessibility, and findability HAPPEN.

Types of Metadata

Whatever its purpose, a database runs on quality, standardized metadata that comes in a number of types. First, there is descriptive metadata that reports the intellectual content of a resource and aids in the discovery, identification, evaluation, collocation, and selection of resources. Then, there is technical metadata that describes information about creation and revision of digital objects, including resolution, compression, and pixel dimensions, that may be needed later for preservation purposes. Third, there is structural metadata that defines the relationships between multiple digital files. This is the "glue that binds a compound digital object together" (A Framework of Guidance for Building Good Digital Collections; Digital Library Forum) located at http://chnm.qmu.edu/digitalhistory/links/pdf/chapter3/3:18.pdf, and is used, for example, to synchronize audio with text, or facilitate navigation through an e-book. Finally, there is administrative metadata that facilitates management of information resources and records information about provenance, history, and ownership, and intellectual property rights.
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Components of Metadata

Wait, we’re not yet through our explanation! Besides the types just noted, metadata has three main components: syntax, semantics, and standards. As in language, metadata syntax, or encoding, defines the rules for construction of metadata “sentences.” Examples of syntax include Machine Readable Cataloging (MARC), a numerical encoding which enables one to go online to determine a library’s holdings, and Extensible Markup Language (XML), a “human readable” or language-based encoding which allows Web publishing, electronic data exchange, and portable, reusable metadata. XML is used in personal digital assistants, cellular phones, and automatic phone banking—and will be used in the library catalogs of the future.

In semantics, by contrast, we find the meaning of semiotic markers—in a metadata scheme as in language. But, because the word “chair” can refer to the piece of furniture or to the person presiding over a committee, a metadata system requires its third element, standards, which fix meanings that would otherwise—as in actual language—be unfixed, subjective, and contextual. Standards make possible the exchange of information by making metadata records compatible with each other and aiding interoperability between databases. There are standards for metadata element sets or schemes, element content, controlled vocabularies, and encoding.

Metadata Schemes

Because of the need for differences and levels of complexity in semantics for describing different types of resources, several different, but standardized metadata schemes have been developed; some are geared to specific disciplines and purposes. Among the most common are the:

• Visual Resources Association Core (VRA), used for describing cultural objects and works of art; the
• Encoded Archival Description (EAD), for describing archived collections; the
  • Text Encoding Initiative (TEI), which facilitates the description and marking up of texts; and, most prominent, the
• Dublin Core, an all-purpose metadata scheme that, used in its simple or qualified forms, can integrate many different formats, including maps, images, and texts. In its simplest form, Dublin Core is a “lowest common denominator” scheme that facilitates system-to-system operability.

The original purpose of the Dublin Core was to organize the Web. Back in 1995, it was thought that the Web could be organized like a library if Web site creators would assign access points, descriptors, and subject headings to their content so that it could be located more easily. Web site creators did not have the motivation to catalog their Web sites, but museum curators, librarians, and visual arts librarians adopted the Dublin Core and were instrumental in its development and significance as a key component of the semantic Web.

WMU Metadata Projects

The Dublin Core metadata has already been used to describe the Caroline Bartlett Crane Collection and the Ward Morgan Photographic Collection (see Gatherings, No. 35, Fall 2004, p. 5) at WMU. Caroline Bartlett Crane was an early 20th century social activist. She designed an award-winning home, still standing in Kalamazoo, which was one of the first focusing on family spaces and convenience for women. The digitized collection includes blueprints of the house, photographs, and letters from Presidents Calvin Coolidge and Herbert Hoover congratulating her on winning the Better Homes in America 1924 Model Home contest. Dublin Core metadata is used to describe the objects, and, just as importantly, to provide a wide audience Web access to a rare and important collection that is otherwise difficult to view.

Ward Morgan was a 20th century Kalamazoo commercial photographer. The digitized collection includes hundreds of photographs of businesses, homes, and schools in the Kalamazoo area. Using the metadata, the researcher can look for specific known businesses and buildings, neighborhoods, types of buildings, objects or people in the photographs, such as “women,” “soda fountain,” or “automobile dealers.” In addition, all photographs “about” certain topics may be gathered using browseable categories including education, advertising, and business products.

Two additional and exciting metadata projects in the works will be of great benefit to Western faculty and students. The first involves tens of thousands of slides featuring art objects that are in the process of being digitized and made available electronically for classroom use. VRA is the metadata scheme chosen for this project. VRA includes a set of elements, which may be encoded in XML, that is designed to describe digitized images of art objects, analog slides or photographs of the objects, and the physical objects themselves. Because of the specific art-related VRA elements used in the cataloging of the slides, the searcher will be able to bring together from this collection all the works of art by a certain artist or architect, from a specific time period or genre, and even all works created using a particular technique or material.

As described in Sharon Carlson’s article, also in this issue of Gatherings, Western Michigan University recently received a grant of $95,000 to digitize and provide Web access to eight Civil War diaries currently housed in the Archives and Regional History Collections. Each diary is in the process of being digitized so that the actual pages may be viewed electronically from anywhere, and also transcribed into an easy-to-read format. The metadata scheme chosen to describe, provide access to, and preserve these valuable pieces of American history was TEI encoded in XML. Using TEI provides a way, not only to create an item-level record for each diary similar to a library catalog record, but also to “mark up” the transcribed text. Places in the text will be marked for retrieval where particular people, places, battles, military units, and topics are mentioned.

Thanks to metadata, information has indeed escaped its containers. Information resources, deteriorating, hidden, and remote, are rediscovered, shared, and preserved. Threatened cultures and histories, muted voices that have been long lost, are given a global stage. Metadata, the magic behind the scenes, makes it possible.

Books as Art

By Pam Rups, Coordinator, Instructional Technology Center, OIT

People feel so empowered when they make a book. I’ve seen that reaction when I teach and also felt it in my own experience. Because most of us tend to buy everything ready-made—our clothes, our food, our homes, and books—and, especially our printed books—most of us have lost the ability to consider making something from scratch—unless the item is available in a kit or is some “thing” simple to put together. As a result, when someone makes a book for the first time, he or she feels the magic of creation.

On the other hand, the physical structure of books seems uninteresting to those who stop to think about them. I know very few people, especially in today’s electronic world, who have ever given any thought as to how a book is put together. Although most of us still use books almost daily: for reference, for study, for fun, and for training, we seem not to care about the package itself. If you ask people how this object, this book that

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they use every day, came into being, you get a shrug of the shoulders, or a "who cares?" look.

A few of us, however, have a great curiosity about these essential tools of our daily life—and especially someone who is a student of medieval history must look to the beginnings of books. And, so, several years ago, I gave myself the task of making a medieval manuscript and writing about the experience for my Master of Arts thesis. Of course, I was very anxious about making a mistake by not getting some part of the process exactly correct, but I had to move forward step by step to completion. And so, I

- split a hunk of aged oak for the cover boards and planed and scraped them flat; then
- spun my own flax fibers on a spindle I made;
- ground my own pigments for painting the miniatures;
- wrote in medieval Latin with a goose quill pen using ink made of oak galls;
- made a piece of vellum from a goat's skin;
- made my own brass fittings and rivets; and
- more...

Despite my fears, I found that these tasks were not impossible or even all that difficult to do, but did take time and patience. At each stage, I reminded myself that manuscripts had been made for hundreds of years by hand, long before any of our modern technology and machines existed. Certainly, skills had to be rediscovered and a few learned from scratch. At the same time, as I progressed through the medieval book creation, it became evident that some of these ancient skills had some special benefits. Besides the basic satisfaction in discovering manual skills that were once fairly common, there is another "value added" consideration. Almost all contemporary books are made by machines, which gives people a very limited idea of what a book can or should be. Modern books are held together mainly with a lot of glue and other materials that do not necessarily contribute to easy opening and prolonged use. As a result, many of today's books are simply another quickly deteriorating and disposable item in our lives. But when making a book by hand, the maker chooses the materials, and is free to use paper and boards and threads and such that will not break down quickly—nor will the wisdom and ideas contained in that book disappear.

My Books and Thoughts

Pocketbook, an early creation, is a book of mine whose idea is based on a play on words. I gathered pockets from my own clothing and items I found in thrift stores. I backed and sewed pairs of pockets together and then sewed the pairs much as one would sew a book with paper pages. I even added some conservative gray "endpapers," also of cloth. The cover has a pocket into which I inserted a letter-press-printed label reading Pocketbook. I've often thought about putting small objects in the pockets as hidden surprises for viewers to find.

Another of my books presents an idea that had long been looking for a means of being expressed. As a child and even into adulthood, I somehow had this sense that

the world was, on the surface, a stable place yet this same world underwent alterations from time to time. And, as I explored the spiritual aspects of life, I began to comprehend how nothing remains the same, even our seemingly stable Earth. I also realized I could experience those changes during my short lifetime.

To convey this, I hunted down old world atlases and took apart one from 1985. This atlas was 21 years old—that seemed significant—and was actually quite difficult and time-consuming to take apart because of the adhesives, which were mostly not water-soluble. After choosing certain sections to use, I interleaved an archival translucent paper so that each page would have an overlay sheet. I then sewed this new set of pages together being careful to use the original sewing holes in order to do the least damage structurally. I gave the book a brand new binding and two attached bookmark ribbons. Onto the end of one

ribbon I tied a silver mechanical pencil, and onto the second, an eraser. On the tracing paper I have crossed out the names of cities and countries that have changed, scribbled out borders that no longer exist, and redrawn shorelines. The book is titled The Unstable World Atlas because I like the ambiguity.

The idea of constant change has found expression in a second book as well. This book is made of CDs, many of them those wonderful freebies that clutter our mailboxes—well, I just had to do something with them! I copied pages from various books of well-known authors and pressed the copied texts onto the CDs in a flat hot-press. This meant the text was backwards on the CDs, which I didn't like at first, but later realized better contributed to the difficulty of recognizing the text. I included pages from Fahrenheit 451 by Ray Bradbury and The Handmaid’s Tale, by Margaret Atwood, both forbidding pictures of what the future could be. I added a Table of Contents and a short introduction explaining the piece, and then bound it in a medieval limp goat vellum binding with cherry wood to reinforce the long stitching on the spine.

The title of this book is The Silent Future: How Will We Speak from the Past? This artful book demonstrates a serious issue facing all of us. Most of our communication in this 21st century is done by e-mail and Web pages and word processors, whereas in the past it was written down by hand on paper. We still have writings from hundreds of years in the past, but already I have computer files from only five years ago that are unreadable. And what about when your computer crashes and you haven't backed up your files? Our children will not find old letters and diaries and photo albums in the attic. It will be a very different future indeed.

In the final analysis, making a book gives people a feeling of power because they can understand and even produce something whose structure was once unfathomable. And, since books are purveyors of information and ideas, making a book also bestows the power to give physical substance to one's own ideas, just as computers and the Internet have enabled once obscure voices to find forums.

So it is that when people start making books, they soon want to personalize them: to decorate the covers, use special end papers, write or edit the text, and create their own illustrations. From there, the process can evolve to the point where the physical book no longer merely carries the message, but is itself part of the message in its appearance and construction. And that is when books become art.
To Market, to Market: Selling Libraries

By Brad Dennis, Education Library & Chair, Marketing Committee

Although the truism may be that "the library is the heart of the university," provosts and presidents want to see data that justify continuing, much less enhanced, financial support. Academic librarians now find themselves in the business of marketing their products to their users. As a result, the University Libraries must not only provide essential resources to promote and facilitate the mission of WMU, but must bring faculty, students, staff, and the community through its doors—or, at least, to its Web site.

To respond to this challenge, a Marketing Committee was created in December of 2003 and given a fourfold charge:

• PROMOTE: To promote library services, collections, news and events to the University community and to the public.
• COORDINATE: To coordinate the University Libraries marketing activities.
• COMMUNICATE: To streamline and foster communication among library administration, faculty, staff, student employees, and the University community.
• PLAN: To develop a strategic marketing plan for the University Libraries.

To begin our work, the Committee set a priority for marketing by recognizing a primary constituency: the WMU faculty. We quickly concluded that the real key to marketing is to develop a strategic partnership with the faculty whom we serve as liaisons. In a recent survey of students by the Marketing Committee, we found that, according to 87.6% of the students surveyed, their instructors required use of the Libraries. This statistic indicates that the instructor plays a lead role in whether students use the library in the completion of their course requirements.

In response to this need "to inform faculty," some library liaisons are already sending electronic newsletters to the departments with whom they work. The newsletters outline new and useful databases, special workshops, and other information that specifies relevant library news. The Libraries outline new and useful databases, special workshops, and other information that specifies relevant library news.

For many scholars and traditional users of libraries, the concept of "marketing" an academic library may seem to be an unnecessary activity. After all, aren't libraries and the resources they hold an essential service for the faculty and students who are teaching, researching and learning? In some academic libraries, the answer may be "no." The numerous services and resources available on the WMU Libraries' Web site are simply too many and too complex to know and search easily. In an age when information is found everywhere, and most insidiously through search engines, the Web, and the public Internet, the uniquely valuable "private" resources and collections of our University Libraries do, more than ever before, need to be marketed to our users. And so, "to market, to market: selling libraries" has become not only a goal, but also an essential key to survival in the 21st century world.

As a student-centered library, we strongly believe that it is our duty to support and develop partnerships with important student groups whenever possible. The Marketing Committee became involved with voter registration in 2004 and partnered with the Western Student Association and other campus organizations including Students for Democracy and Get Your Vote On. Members of the Committee selected URL links and organized the content for a voter registration and information site titled "Smart Voting @ Your Library." The site was linked to the University Libraries home page. Members of the Committee also designed, created and delivered bookmarks promoting the site. The Western Student Association and the Division of Student Affairs were pleased with the Web site and created their own promotional flyer promoting the site and other events.

David A. Morrison, in his book, Marketing to the Campus Crowd (Dearborn Trade Publishing, 2004), notes that college students are always ready to obtain "freebies" and are very interested in promotional giveaways. The Marketing Committee was given a generous donation from the Friends of the Western Michigan University Libraries to purchase promotional materials. In turn, the Committee distributed materials promoting the Friends of the University Libraries. To develop the "give away" advertising, the Committee worked with Promotion Concepts, a local firm, to create pens, magnets and water bottles with the logo and slogan: "Puzzled? We put pieces together @ your library." The items were then given to participants and visitors during several events, notably, the New Faculty Orientation session, the Graduate Assistants Orientation sessions, Bronco Days sessions, Freshmen Orientation sessions, the Graduate Student Fair, and the Medallion Scholars Event.

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The Civil War Reborn

By Sharon Carlson, Director, University Archives and Regional History Collections

In the 140 years since the American Civil War (1860-65) ended, this uniquely momentous conflict continues to attract more public interest than perhaps any other event in our history. Well over 50,000 books have been written about the War since its conclusion in 1865. A quick search of Books in Print highlights another 140 forthcoming titles. The War had enormous impact on the fledgling country in many ways. Beyond basic questions of secession and the morality of the institution of slavery, communities experienced upheaval as families were separated and the work force depleted. The South also experienced the physical destruction of farms and cities that took decades to rebuild.

For the nearly three million men that served, war could mean death or permanent disability as both were real possibilities. An estimated 620,000 died, with at least two-thirds succumbing to disease, and the total mortality of the war represented a loss of more than two percent of the entire population of the United States at that time. Among those who survived the war, hundreds of thousands suffered from permanent illnesses and disabilities for the rest of their lives. In Mississippi alone, the 1866 State expended one-fifth of its budget on artificial limbs. Of all the "wars" in which the U.S. has fought, this one brought the highest number of deaths.

More than 90,000 men from Michigan served in thirty regiments of infantry and eleven regiments of cavalry. Of these men, 85,000 were volunteers. Because of the importance of this period in our history and the issue of preservation as well as access to primary accounts of the era, Western Michigan University Libraries submitted a proposal to digitize eight Civil War diaries held in the Regional History Collections for inclusion in the Michigan Electronic Library (MeL). The diaries include a diverse range of military experiences. We also sought to lend insight into an important national event from the Michigan perspective. The diarists describe experiences ranging from the mundane to the extraordinary. Many men serving in the war had probably never traveled great distances from their homes. They took time to record the novel things they viewed for the first time. On March 27, 1862, Cyrus Thomas noted in his diary, "Passed through some delightful country. Large plantations & splendid mansions could be seen." Thomas entered service on August 12, 1861, serving with Company 3 of the 49th Ohio Infantry. He also references a battle at Dog Walk, Kentucky, and has observations about rations and military life.

Other diarists mention battles and key events. George Harrington remarks about the Battle of Gettysburg on July 2 and 3, 1863. Alonzo C. Ide, a native of Battle Creek, created copious lists of the men killed and wounded at the Battle of Campbell's Station and the Battle of Spotsylvania Courthouse. He listed the men who fell in East Tennessee who are buried in a circular cemetery at Knoxville. After the war, he resided at Yorkville, near Gull Lake.

One of the most engaging diaries in the project was written by Eugene Sly. Sly was born in 1841 at Galen, New York, eventually moving to Illinois. He was attending school in Chicago when the Civil War began. He left school and enlisted on August 7, 1862. He engaged in battles at Stone River and Chickamauga. At the battle of Chickamauga, he volunteered to remain and care for wounded and, as a result, was taken a prisoner of war. Eugene Sly's diary includes observations about his experiences as a prisoner. The diary was written in 1864, during which time he was incarcerated in several Confederate prisons. His entries begin with his experiences in Danville Prison, a holding center, located in Richmond, Virginia, which led to a move to Libby Prison, also in Richmond. He was transferred to the infamous Andersonville (Georgia) prison on May 20 and a few months later, September 15, 1864, to South Carolina, to the Florence Military Stockade, described later as a "death camp." All together he survived seventeen months in prisons at Libby, Andersonville, and Florence before his release. After the war, he settled in Petoskey and later at Benton Harbor.

Specific and vague illusions to sickness appear in several of the diaries. Perhaps Eli Page may have had one of the most physically demanding jobs as part of the Quartermaster Unit supplying the field. Among his entries, he frequently notes work projects, with numerous references to "boxes" and "carts." He also mentions "sore eyes" and "weak eyes" in several entries. Page was originally from Ohio and settled in Allegan County after the war.

Milton Sawyer of Portland, Michigan, wrote about recurring fevers and other health problems. At age 46, he was the oldest diarist and had enlisted in Company G of the Michigan 27th Infantry, serving as the principal musician. There are references to musicians, instruments, and names of musicians. Included is a list of fifers in the 27th regiment. Given his age and his health, this diary also makes observations about the war and to hospital conditions. Sawyer often writes about his wife and his longing to be back home. Not surprisingly, he was eventually discharged for disability at Oak Ridge, Mississippi, on...
Civil War...
Continued from page 5

July 4, 1863.

The diaries also contain information about the recreational activities of the men. George Harrington noted on December 24, 1863, "Officers planning a dance." Other diarists mention fishing and some included original verse or inserted newssheet containing songs and verse into their diaries.

The actual digitization project has required a team approach bringing together a variety of skills and expertise. Bettina Meyer, Assistant Dean for Resources, is administering the grant and personnel. Dr. Sharon Carlson is working with student transcribers and content. Paul Howell is overseeing all technological aspects. Lou Ann Morgan is coordinating scanning and student training. Sheila Bair has prepared catalog records and metadata at the collection and item level. Libby Catt has been involved in scanning. Several undergraduate interns and students have been involved in the transcription and proofreading phase. Dr. Ralph Gordon, WMU Department of History and Michigan State University Kalamazoo Center for Medical Studies, has examined the diaries for content.

The digitized and enhanced versions of these diaries will become part of the Michigan Electronic Library (MeL). The goal of the Michigan Electronic Library's digitization initiative was best stated by Dr. William Anderson, Director of the Michigan Department of History, Arts and Libraries [http://www.michigan.gov/ral/A-1607-207-160--121750--00.html]:

"Learning about and understanding our past is essential to achieving a well-rounded education. Today's grants are not only about preserving some very unique pieces of our collective history, but also about making sure that the students of tomorrow won't be deprived of these resources."

American Library Association's Booklist magazine indicates that well over 50,000 books have been written about the conflict. See volume 97, page 1006, (2000-2001)
