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Selecting Subject Heading Lists and Thesauri for Digital Imaging Projects: Report of the Survey from *Digital Transfer of Slides from Architecture, Interiors, and Furniture and History of Costume to CD-ROM*

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Digital imaging projects are a major undertaking. Not only do they require knowledge and skill in using scanning equipment, scanning software, and image management software, as well as server space and trained staff; they require an understanding of the metadata needed for fully descriptive cataloging to aid discovery and retrieval of the images as well. There are several ways in which imagebase users discover and access images. The methods chosen by the user depend on his or her knowledge of a subject, experience in locating images, and personal vocabulary. This study was designed to gain more insight into the vocabulary employed by imagebase users.

Introduction

This survey was undertaken in conjunction with a Teaching and Learning with Technology (TLT) grant project at Western Michigan University entitled *Digital Transfer of Slides from Architecture, Interiors, and Furniture¹ and History of Costume² to CD-ROM* during the 2001-2002 academic year. It examined the use of terms from four subject heading lists and thesauri commonly used to describe images of artifacts and works of art. The four tools are the *Thesaurus for Graphic Materials* (TGM), *Art and Architecture Thesaurus* (AAT), *Library of Congress Subject Headings* (LCSH), and *Bibliography of the History of Art Subject Headings* (BHA). The goal of the study was to select one of these four standard vocabularies to use for image indexing in this project and future digital image projects undertaken by the Visual Resources Library and the principal investigator.

During the course of the TLT project, as slide images from two popular slide series distributed by Slide Presentations Publishers, Inc. were scanned and cataloged for the digital transfer, keywords were assigned to each image in order to facilitate description, discovery, and retrieval of the images. Because the finished product was designed solely for the use of the WMU community, the selection of metadata and indexing terms needed to fit the knowledge level and vocabulary of the local user. In the database interface, keyword and other search terms are input by the user; therefore, it is essential that the vocabulary selected for indexing are as close to the natural language of the user as possible. In order to determine which of the thesauri most closely matched local terminology, a survey was taken

of faculty, staff, students, and administrators from the university.

The results of the survey are reported in this paper so that other visual resources libraries and centers may use the findings to assist them in creating keywords and indexing digital image projects.

Scope

Since the digitization project that motivated this survey was designed to make images more accessible to faculty and undergraduate students, the scope of this survey is limited to the assignment of keywords to objects in images, or the semantics of image description.³ The goal was to decide which list of terms is best used to discover what Erwin Panofsky referred to as pre-iconographic objects and actions. This survey is not concerned with the iconography, abstract concepts, theme, or narrative of an image. Neither is it involved with the techniques used to create the depicted objects, although some participants did use terms that described represented media in the portion of the survey that required them to fill in the blanks or list terms they thought were appropriate. This survey does not encompass content-based indexing or hierarchical subject heading formation. Being able to select and depend on a standardized vocabulary would enable the project catalogers to take the guesswork out of using natural language and create a more organized system for assigning keywords to images.⁴

Methodology

The survey was comprised forty-two images selected from the two slide sets and shown to the participants of the study. There were two parts to the survey. Part one was multiple choice. Participants were shown an image and asked to select from three or four terms selected from the four thesauri.⁵ Participants were instructed to circle the term that best described the content of the image. Part two was short answer. Participants could use terms from their own visual vocabulary to describe images. The WMU Human Subjects Institutional Review Board approved the survey before it was given to participants.

Flyers and an e-mail announcement were sent out to seven departments⁶ on campus that are known to use images to illustrate lectures and teaching, inviting faculty, staff, and students to take part in the survey. It was hoped that fifty participants would complete the survey; however, after giving the survey five times during November and December 2001, only twenty-five people had contributed. The decision was made to work with these twenty-five surveys, as these participants were a representative sample of the university community, and move on with the project.

Results

Since multiple-choice answers for the first part of

the survey were chosen from the four thesauri, tabulating this portion of the survey was rather straightforward. The total number of terms selected was 596. Results are reported in Table 1. Thirty-four percent of the total number of terms were from TGM. Following were LCSH and AAT with 28 and 24.4 percent respectively. BHA represented 13.4 percent of the answers.

Table 1 (Number and percentage of answers)

TGM	AAT	LCSH	BHA
203	146	167	80
34%	24.4%	28%	13.4%

Tabulating the second part of the survey was considerably more time consuming and required a trained eye to record the participant-supplied answers and compare them to the four thesauri. The principal investigator reviewed each answer, compiling a list of 499 participant-supplied image descriptors and entering them onto an Excel spreadsheet. The descriptors were then compared to the nearest counterparts in each of the four vocabularies.

In order to accomplish this task, a student assistant was trained in the use of the four vocabularies. Each row contained a participant-supplied term followed by one column representing each of the four thesauri on the spreadsheet. The objective was to find a word from each or all thesauri that matched or most closely matched the contributor's word. This term was then recorded in the appropriate column. After all of the words were matched, the terms were reviewed and analyzed. In many instances, the only difference between the contributor-supplied term and a thesaurus term was a singular, plural, or gender ending to the word. The majority of the contributor-supplied terms, nonetheless, did not come anywhere near a term in any of the thesauri. Table 2 details the results of the second portion of the survey.

Of the terms that did match, AAT reflected the greatest percentage of the terms with 17 percent. In the cases where plurals or gender endings were the only differences, participant supplied terms closely matched TGM, AAT, and LCSH. These responses were within two percentage points of each other. Since the root term of the participant-supplied term matched the root of the thesaurus term, these

figures were combined. When the percentages from each of the tools were combined, AAT received 41.5 percent of the matches, five percentage points or more above the other three thesauri. When examining the participant-supplied responses, it is clear that terms from AAT were used most often for two reasons. First, AAT contains more specific names for items depicted in the images, such as architectural and costume elements. Second, this thesaurus contains more terms for specific artistic techniques than the other three vocabularies.

The fact remains, however, that the majority of the participant-supplied terms were not found in any of the thesauri. Upon inspection of this aspect of the second part of the study, it was concluded that this might be due to the fact that seventeen of the twenty-five participants are not directly involved in the creation, teaching, and/or research in the subjects of architecture and costume studies. The study and practice of these two fields requires a specialized vocabulary.

Analysis and Discussion

The results of each portion of the survey pointed to two thesauri. Even though the numbers are close, terms from TGM were selected more often than terms from AAT, LCSH, and BHA when the user is given a list of terms from which to select (Table 1). These results can be attributed to the following reasons. First, TGM contains terms that are more general than the others, being less specific to the visual arts. The terms describe what the picture is *of* or the *ofness* of the image. When given several choices of terms to choose from, the average image user may select the most general with the broadest meaning from the list. A second reason this may be the case is that only 32 percent (eight) of the participants have formal visual art training.

Figures of the results of the second part of the survey were far more interesting and descriptive. When allowed to fill in the blanks and supply their own terms, participants were more likely to describe not only the *ofness* of an image, but the *aboutness* as well.⁷ For example, in the second part an image from a miniature from a fifteenth-century German manuscript depicting a scene from the Birth of the Virgin was shown.⁸ Participants were asked to describe what the women were doing in the image. It depicts three women kneeling in front of a washbasin. When asked what the women were doing, most people filled in *washing*

Table 2

	TGM	AAT	LCSH	BHA
Matches out of 499 terms	11%	17%	12.5%	14%
Plural/Gender ending differences	25.5%	24.5%	23.5%	20.5%
Total of Matches and Plural/Gender differences	36.5%	41.5%	36%	34.5%
Not appearing in a vocabulary	63.5%	58.5%	64%	65.5%

or terms with a similar or the same meaning, essentially describing the *ofness*⁹ of the image. One person described the *aboutness*¹⁰ of the images, and included the term *midwives*; another used the term *midwifery* to describe what the three women were doing.¹¹ Having more "free rein" over the terms to select to describe an image allowed users to address issues of the *aboutness* as well as *ofness* of an image.

Seventeen percent of the supplied answers matched terms from AAT. This tool was created to describe the most specific elements of the decorative arts, crafts, works of fine visual arts, and other artifacts. AAT and BHA are the two most art specific of the four thesauri chosen for this survey. Of these two works, AAT contains more terms, especially those describing very small details of artifacts. For example, AAT has nine terms to describe types of dresses, whereas BHA contains only five.

Since images were selected from slide sets addressing the history of costume and architecture and the accompanying details, questions and answers can be divided into these subjects. Terms used to describe architecture were more accurate than those describing costume and costume elements. Judging by the closer accuracy of the terms used to describe images of architecture, the principal investigator suggests that the average image and library user at WMU is more familiar with appropriate architectural element terms than those used to describe historical clothing. This may have to do with the fact that architectural elements have remained relatively the same throughout western history; a bedroom has remained a bedroom, whereas clothing and clothing accessories have changed considerably. An example of this is the *cotehardie* of fifteenth-century France, a forerunner to the modern shirt for men and dress for women, which has given way to the *pantsuits* of the twentieth century. Also, it is possible that in general, more people have had more exposure to architecture and have taken more classes where it is discussed in detail than courses in clothing and textiles. The study of architecture crosses more disciplinary boundaries than does clothing, textiles, and fashion in undergraduate programs.

Conclusion

It was difficult to come to a clear-cut conclusion with this study as the findings from the first part of the survey were not parallel to the findings of the second part. Even though the *Thesaurus for Graphic Materials* is a widely used thesaurus for the indexing of images, it is not art specific and lacks terms that can describe some of the intricate details of an image representing works of visual arts, crafts, and structures. Frequently it is these intricate details, or artistic elements, for which an image user in departments of Art, History, Family and Consumer Science, or Theatre is looking. The *Thesaurus for Graphic Materials* is an excellent choice for a general picture and image collection. Both the

Thesaurus for Graphic Materials and *Library of Congress Subject Headings* allow for the use of terms such as "cats in art" or "people in art" while the *Art and Architecture Thesaurus* and the *Bibliography of the History of Art Subject Headings* do not. For some projects this may be the direction image catalogers would like to take. However, neither the *Thesaurus for Graphic Materials* nor *Library of Congress Subject Headings* provides the level of indexing required for the in-depth image study of costume and architecture.

If possible, the ideal situation would be to provide two sets of keywords. One of these sets could use general terms from the *Thesaurus for Graphic Materials*. The other set could be art specific, such as the *Art and Architecture Thesaurus*.

Since the second part of the study allowed users to select terms that described both the *ofness* and *aboutness* of the image, as well as the smaller elements of an artifact or work of art, the principal investigator decided to give the second half of the survey more weight than the first. Therefore, it has been determined that the *Art and Architecture Thesaurus* will be used on this TLT project relating to images of architecture, furniture, and costume. Future digital imaging projects undertaken by the WMU Visual Resources Library will use the *Art and Architecture Thesaurus* and the *Thesaurus for Graphic Materials*, where there will be a greater variety of images and objects represented.

Notes

¹ Stephen Sbarge, *Architecture, Interiors, and Furniture* (New York: Slide Presentations, 1978).

² Jeanne Button, *History of Costume in Slides, Notes, and Commentaries* (New York: Slide Presentations, 1975).

³ Corinne Jorgensen, Alejandro Jaimes, Ana B. Benitez, and Shih-Fu Chang, "A Conceptual Framework and Empirical Research for Classifying Visual Descriptors" in *Journal of the American Society for Information Science and Technology* 52 (11) (2001): 939.

⁴ Corinne Jorgensen, *Image Retrieval: Theory and Research* (Lanham, MD: Scarecrow Press, 2003) p. 71.

⁵ In some cases, terms from the *Bibliography of the History of Art Subject Headings* were identical to those of one of the other three thesauri. From the *Bibliography of the History of Art*, three terms matched those from the *Thesaurus for Graphic Materials*, three of the *Library of Congress Subject Headings*, and four from the *Art and Architecture Thesaurus*. From the *Library of Congress Subject Headings*, one term matched the *Thesaurus for Graphic Materials*. From the *Art and Architecture Thesaurus*, one term matched the *Thesaurus for Graphic Materials*.

⁶ Announcements were sent to the departments of Art, Family and Consumer Science, Theatre, History, Industrial Design, Anthropology, and English.

⁷ Sara Shatford Layne, "Some Issues in the Indexing of Images," *Journal of the American Society for Information Science* 45 (8) (1994): 584.

⁸ This image is included in *History of Costume* to portray everyday women's garments.

⁹ Layne, 584.

¹⁰ Ibid.

¹¹ It is evident that this participant was familiar with biblical iconography.

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