DOCUMENT RESUME

ABSTRACT
        Activities and information needs in museums and a
project undertaken by the Margaret Woodbury Strong Museum to develop
systematic solutions to problems in cataloging museum collections are
described. Museum activities are grouped in three categories: (1)
initial--acquisition, accession, registration, identification, and
restoration; (2) ongoing--research, exhibition, and conservation
efforts; and (3) terminal--de-accessioning. The ongoing are the most
important of the three types of activities. In order to carry out
these activities efficiently, all the information required for each
defined activity must be available at the right time and place;
however, at the present time there are no systems of nomenclature
that are generally accepted as a basis for defining and identifying
man-made artifacts. To meet this need, this project focused on the
creation of a thesaurus for use at the Strong Museum. This
standardized word list, or lexicon, includes words and phrases, and
shows synonymous and hierarchical word relationships and
dependencies. While it is not a panacea for all museum cataloging
problems, it can serve as a common starting point in identification
activities which are crucial to the cataloging process. A summary of
the project, its rationale and processes, includes a description of
the lexicon with examples. (MBR)

MUSEUM DATA BANK RESEARCH REPORT

Number 10

The Onomastic Octopus [1]

by

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2

Museum records are somewhat like politics in the United States today. Everyone deplores the generally poor state of affairs but no one does very much about it except to lament, "If only there were a little more money...." I am sure you have heard the story.

The fact that so little effort has been directed toward exploring the structure and function of museum records is surprising, for there is an extensive body of knowledge available concerning record-keeping systems in general (e.g., see Alexander 1974; Optner 1960). Businesses and the Government spend millions of dollars each year on what is called "information systems analysis," and there has been a great deal of spillover from this into libraries and most other human institutions. But not into museums.

In this paper, we will bring the analytical point of view of a systems analyst to bear upon the information needs of museums. Our objectives will be: first, to present an overview description of the activities and information needs in museums; and then, to focus upon a particular information need--one that has been too long ignored--and to report on a project that is designed to correct the situation.
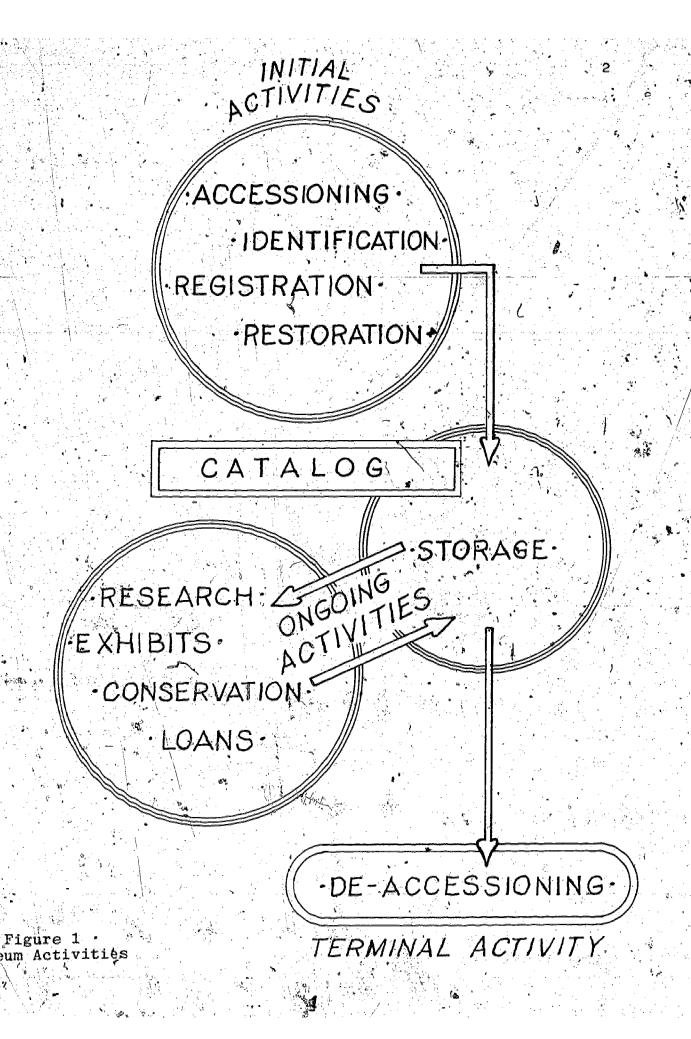
When a systems analyst begins work, the first tasks are to define the sub-system being examined and to delineate the activities which are necessary or desirable parts of that sub-system. Here, we will be looking at those activities performed in a museum which are concerned with the collections. Accounting, payroll, personnel, and security, are other museum sub-systems which could be examined in the same way.

Activities that involve museum collections may be conveniently grouped into three categories (see Figure 1):

Initial Activities.   When an artifact or specimen is first acquired, a number of things happen. The object must be accessioned, registered, identified and, possibly, restored. In some museums a photograph is also made as a routine part of these "Initial Activities."

Ongoing Activities.   Once the first surge of activities has been completed, most museum objects rest in storage until they are needed for a research project, or an exhibit, either at home or (on loan) in some other museum, or unless a deterioration in the condition of the object requires some conservation effort. It is these "Ongoing Activities" which are the essential business of a museum. The purpose of all of the initial activities is simply to make the ongoing activities possible.

Terminal Activity.   Eventually, all museum objects are disposed of in one way or another. The "Terminal Activity" of de-accessioning must be mentioned in order to make the cycle complete. However, it is the ongoing activities of the museum that are important.

3

INITIAL ACTIVITIES

·ACCESSIONING·
·IDENTIFICATION·
·REGISTRATION·
·RESTORATION·

CATALOG

·RESEARCH·
·EXHIBITS·
·CONSERVATION·
·LOANS·

ONGOING ACTIVITIES

·STORAGE·

·DE-ACCESSIONING·

TERMINAL ACTIVITY

Figure 1
Museum Activities

When the sub-system and the key activities which comprise that sub-system have been defined, the next step in the analysis of an information system is to develop a clear and precise statement of what is needed in order for those activities to be performed most efficiently. "What is needed" always boils down to having all of the information required for each defined activity available at the right time and place for the person who is to perform the activity, and to accomplish this as cheaply as possible..

Several things are involved in this. However, information systems do have a dependable structure, and the systems analyst, consciously or sub-consciously, knows that consideration must always be given to both:

1. The information system --the forms that are used, the flow of data and the techniques by which the data are manipulated, either manually or by machine or both--and

2. The information content--the categories or elements of data that are needed and problems of syntax, authority files, etc.

From here on, in this paper, we will be concerned only with information content, not with information systems or forms and techniques of data management. We will use as an example the record which, in a museum, is usually thought of as the primary locus of data about the collections: namely, the catalog. We will delineate some of the kinds of information (the categories of data) that are usually required as a basis for searching catalog records, and then we will look at some of the problems of syntax and content that must be resolved if a catalog record is to serve its designated purposes adequately.

Some of the data categories in a typical museum catalog are:

    Registration Number
    Object Class
    Object Name
    Style Name
    Subject Represented
    Artist or Artisan Name
    Maker or Manufacturer
    Materials from which constructed
    Techniques of construction
    Place of Origin
    Date of Origin

For each of these data categories the systems analyst would determine the source from which the data input is derived and the syntax or format in which the data should be organized in order for it to serve as an effective means of communication from the time the original catalog record is prepared to the time of use, perhaps many years later. With some categories of data (e.g., Date of Origin) this is merely a matter of codifying the format of the entries. We all use the Gregorian calendar, and any four digit numeral written in a data category called "Date of Origin" will be assumed to be anno Domini in the Gregorian system. However, with other data categories the situation is much more complex.

Systems analysis is the process of working backwards from a statement of information needs to the records required to fill those needs, and from there back to the source of each data element on every record. In this brief presentation, every bit of information which appears on a typical catalog record cannot be traced back to its point of origin. However, I would like to focus upon two of the descriptor categories listed above: Object Class and Object Name. Both of these originate from an activity of data generation which takes place soon after an object is acquired. On our illustration (Figure 1) I call this the activity of "Identification."

Identification may be defined as the classification and naming of an object. What is it called? More importantly, though, identification is the classification and naming of the object according to some internally consistent and generally accepted system of nomenclature. Identification is an essential museum activity regardless of the nature of the collection—natural science specimens, art objects, historical, archaeological or ethnographic artifacts—for it is the activity of placing a particular object into a meaningful category vis-a-vis the rest of the perceived world of experience. Unless this activity is performed properly, the artifact or specimen—especially in a large museum—may just as well not be in the museum collections at all for there will be no systematic way of ever locating it again when it is needed for a research project or an exhibit or loan. Identification and, with most collections, registration (registration is sometimes omitted with natural science specimens) provide the only data about a museum object which are carried over to every record of that object. Whatever other information there may be on a record the document will be meaningless unless the object which the record represents can be recognized within a framework of some system of nomenclature and, usually, within some system of registration.

Let us look at a few examples both to see how the identification activity is performed and to examine the problems involved. If someone brings a "pretty rock" into the museum a Curator of Geology could readily identify it as, perhaps, Azurite. If, the next day, a Curator of Ornithology collects an Eastern bluebird, the specimen would be identified on the museum records as Sialia sialis. In both of these cases there is a generally accepted and internally consistent system of nomenclature to which the curator can refer as a basis for accurate and positive identification of the specimen. But, in another museum, a curator who acquires a model-T Ford roadster would have to ask: Is this artifact to be identified as a transportation device? An automobile? (Or even with the more colloquial term "car"?) Or should it be identified as a roadster? As a Ford? Or as a model-T? At the same time another curator might acquire a Renaissance Revival side chair and have to struggle with the same kinds of questions: Is this object classified as furniture? As a side chair? As a chair? Or does it take all four words in order to properly identify it?

These illustrations are not unusual. They serve only to point up the fact that there is at the present time no system of nomenclature that is acceptable as a basis for identification of man-made artifacts, and there are few systems of nomenclature even for small groups of artifacts.

It appears as though there are two interrelated reasons why no one has ever attempted to do for the area of man-made artifactual material what Linnaeus initiated for the natural sciences:

1. In the first place, it is not easy to see any unifying thread that carries throughout the field of man's artifactual remains. At least we have been unable to find anyone who has laid claim to a rationale that could serve as the basis for an internally consistent taxonomy.

2. Perhaps even more important, though, prior to the invention of computers and the initial attempts to create computerized museum catalogs, the need for a rational system of nomenclature for all of man's artifacts did not become apparent. It was only after computers were developed that were adequate for the creation of large-scale catalogs, and only after programming systems were created so that these computers could, in fact, do the job, that we realized something was still missing. The computer has forced us to recognize the lack of precision and the lack of consistency in our museum catalogs. We now realize that many of the catalogs previously maintained with manual processing systems could have been substantially more useful than they were if the objects had been identified initially within a framework of a more precise system of nomenclature. Ever faster and more sophisticated techniques for the processing of verbal data have helped us to recognize, but not to solve, the more basic problems of precision and consistency.

At the Margaret Woodbury Strong Museum we have undertaken to solve this problem--of necessity for ourselves and, hopefully, in the process for others--by creating a system of nomenclature for the identification of man-made objects and, on the basis of this, a museum lexicon or the onomastic octopus. The word onomastic is derived from the Greek root, onoma (as in onomatopoetic and synonomous). It means "relating to or consisting of names." The usage here was suggested by Robert E. Springer, Registrar of the Henry Ford Museum and Greenfield Village, when he wrote that they were pleased to be contributing yet another tentacle to our onomastic octopus.

A lexicon is a standardized word list. As the term is used here, it is synonymous with the special definition of a thesaurus developed by the American National Standards Institute (1974: 1;9): "...a compilation of words and phrases showing synonymous, hierarchical, and other relationships and dependencies." The function of a lexicon is to provide a standardized vocabulary for information storage and retrieval."

Our approach to this project has been fairly straightforward. First, we created what we believe is a defensible rationale that could serve as a logical basis for an internally consistent lexicon. Second, we created a rigid and carefully defined hierarchical structure for the terminology. Third, we enlisted a large group of museums to help develop the specialized word lists that would be necessary in a lexicon such as this. The work is moving forward very rapidly, by means of remote terminal entry to the computer at the University of Rochester; and will be published shortly by the American Association for State and Local History under the title, Nomenclature for Museum Cataloging.

At this point I would like to briefly describe the rationale for the project and the hierarchical structure that has been created. Then I will show a few examples of what the lexicon will look like in final printed form.

In another publication (Chenhall 1975: 69) I suggest that common names of objects could be organized into broad and more narrow classifications on the basis of known or presumed function, with the functional classifications derived from some authoritative reference such as the Outline of Cultural Materials (Murdock) 1961). The Outline does serve as a good point of beginning. However: (1) it covers all of mankind's activities, not just the physical objects that have resulted from those activities; and (2) it classifies activities and objects on the basis of seven different principles. It does not provide any single rationale that could be used as a basis for a precise system of nomenclature.

The lexicon being developed at the Strong Museum is based upon the assumption that every man-made object was originally created to fulfill some function or purpose, and, further, that original function is the only common denominator that is present in all of the artifacts of man, however simple or complex. Thus, at the top or highest level in any hierarchy of classifying and naming man-made artifacts there can be no consistent organizing principle other than the known (or presumed) reason why each object was originally created.

The concept of original function is an important part of this statement. Cigar store Indians, for example, were created originally as trade signs for retail tobacco shops. Only in recent years have they become artistic or decorative objects. Similar statements could be made about many of today's "collectibles." The reason for owning an object may change through time, just as styles do, but the orignal function of any man-made object remains constant.

Some of the objects created by man (fortunately, not too many) were originally intended to serve more than a single purpose. This is most commonly found among utilitarian objects which were also used for advertising or sales promotional purposes: Coca Cola signs that are also serving trays or mirrors or thermometers; glass rolling pins that were sold filled with confectioners sugar; and so on. Also, there is some aversion on the part of archaeologists to inferring the function of a prehistoric artifact when the original purpose for creating the object cannot be ascertained with certainity.

Curatorial judgment must be exercised with each particular artifact in determining the primary original function. However, with a few guidelines in problem areas, the principle of original function has been found to be a workable rationale for the classification and naming of man-made objects. Of equal importance is the fact that so far no viable alternative to this rationale has appeared.

The museum lexicon described here consists of three hierarchically related levels of terminology: (1) a controlled list of major categories; (2) a controlled list of classification terms; and (3) an open-ended list of object names.

The major categories (Figure 2) are a very limited set of functional divisions which might, in a manual filing system, serve as the labels on file drawers or the tabs that separate major groups of catalog cards. A numeric code probably would be entered on a lower corner of each card to indicate the section of the file where that card belongs. However, there would be no reason to record the major category names on the individual cards.

Classification terms are carefully predefined subdivisions of the major categories which make it possible to separate the records into more refined functional classes (see Figure 3). In the aggregate, they comprise a word list or authority file which is used during the Identification process. In a card catalog, for example, the term appropriate to a particular artifact might be recorded in one of the upper corners of each card, since this is the term that would be used as a basis for filing (or locating) the card within the proper major category file drawer. In a computerized catalog the data category called "Object Class" would be a separate field in each record.

Object names may be thought of as further subdivisions of the classification terms. In a card catalog the object name might be recorded in the upper corner of each card opposite from the corner used for the classification term. Filing would be done, first, by classification term and within each classification term by object name. In a computerized catalog "Object Name" would be a separate field.

Even though object names are considered as subdivisions of classification terms, there are important distinctions between these two levels of terminology:

1. Classification terms are carefully predefined and should be used without modification; any list of object names must be open-ended so that it can be expanded.

2. Classification terms, like major categories, are based upon the single rationale of original function; an object name may imply function (e.g., the function of shears is to shear), but this is more the exception than the rule. The common names used to identify man-made objects are extremely variable.

3. Classification terms are worded so that each term is unique--i.e., it appears only one place in the entire lexicon structure; an object name may appear as a subdivision of more than one classification term.

The lexicon entries are being compiled according to the American National Standard Guidelines for Thesaurus Structure, Construction and Use (American National Standards Institute 1974). Recording conventions include the following:

1. Solid capital letters are used to indicate acceptable classification terms and acceptable object names. Lower case letters (in a list of otherwise acceptable terms) mean that the particular phrase should not be used. In all cases, terms that are not acceptable are followed immediately by a cross-reference to guide the reader to the proper terminology.

Category 1:   Structures

Category 2:   Building Furnishings

Category 3:   Personal Artifacts

Category 4:   Tools and Equipment

Category 5:   Communication Artifacts

Category 6:   Transportation Artifacts

Category 7:   Art Objects

Category 8:   Recreational Artifacts

Category 9:   Societal Artifacts

Category 10: Packages and Containers

Category 11: Unclassifiable Artifacts

Figure 2

Major Artifact Categories

Category 8: Recreational Artifacts

Artifacts originally created to be used as toys or in
carrying on the activities of sports, games, gambling or
public entertainment

GAME

An artifact originally created for use in a competitive
activity based upon chance, problem-solving and
calculation as opposed to physical effort, and conducted
according to rules; includes all forms of gambling
devices; see also SPORTS EQUIPMENT and TOY

PUBLIC ENTERTAINMENT DEVICE

An artifact originally created for use in the production
of non-competitive spectator entertainment; see also
SPORTS EQUIPMENT

RECREATIONAL DEVICE

An artifact originally created for use in a
participatory, usually non-competitive, recreational
activity other than an thletic game or exercise;
includes equipment for which a use charge is normally
made (e.g., a carousel, a pinball machine) as well as
the free facilities of a public park (e.g., a swing, a
slide); also includes the same types of equipment when
privately owned

SPORTS EQUIPMENT

An artifact originally created for use in a physical
activity that is competitive or recreational; includes
equipment used in all forms of athletic games and
exercises, whether the participant is a professional or
an amateur and the activity is an individual or a team
sport; see also GAME, TOY and RECREATIONAL DEVICE

TOY

An artifact originally created to be a plaything; may
be representational (i.e., a small-sized reproduction
of a functional object, a person or a creature) or
non-representational (e.g., a ball, a top, a kite); a
toy is created primarily to be played with, a craft
object is primarily for display) see ORIGINAL ART,
Category 7); see also GAME, SPORTS EQUIPMENT and
RECREATIONAL DEVICE

Figure 3
Sample Classification
Term Definitions

2. Classification terms and object names normally appear in the singular rather than the plural form. In a computerized system it is essential that a term be entered exactly the same way each time and that this be in the same form that will be used for retrieval. Since museums customarily catalog individual items, the convention of using singular terminology seems the more appropriate.

3. Multiword terms are included in the lexicon in one of two ways. If the words are customarily thought of as a unit, that is the way they appear. For example, phrases such as BODY PROTECTOR and IRISH MAIL would be meaningless if reversed. However, if an item logically would be retrieved as a subdivision of a larger category, the entry appears in the lexicon alphabetized under the larger term, followed by a comma, and the less inclusive term. For example:

(larger term)	,	(suffix qualifier)
ADZ	,	COOPER'S
MASK	,	CATCHER'S
PLANE	,	SMOOTHING

Wherever there is any doubt, a cross-reference guides the reader to the proper place.

4. Several abbreviations and special terms are used with lexicon entries:

def   A definition of the term immediately above.

note   Any special information that is necessary to the proper use of the term immediately above.

rt   Related term. This is a suggestion to the reader to consider other terms which might be more appropriate in naming an object.

use   This will most often appear following terms that are unacceptable (as indicated by lower case type). It is a guide to the user to suggest an alternate, correct term.

ref   A numeric reference to the bibliographic entry used to prepare the list of object names within a classification term.

Figures 4 and 5 are examples of lexicon pages. Figure 4 is a sample page printed on the computer in hierarchical format. Thus, for each major artifact category, the acceptable classification terms are shown at the margin, and the object names are listed alphabetically as subdivisions of the classification terms. Figure 5 is a sample page of object name terminology, arranged in straight alphabetic order, with the corresponding classification terms shown in the column to the right.

Please note that these are only sample pages, created as interim print-out to show the structure of the computer prepared lexicon. Many additional entries will be interspersed among the terms on both of these pages before the lexicon is complete.

SPORTS EQUIPMENT (cont.)

SWIM MASK
SWINGING ROPE
TABLE TENNIS PADDLE
TACKLING DUMMY
TENNIS PADDLE
TENNIS RACKET
Tenpin
         use BOWLING PIN
TETHERBALL
TOBOGGAN
TRAMPOLINE
TRAP
TRAPEZE
VAULTING HORSE
VAULTING POLE
VOLLEYBALL
WRIST DEVELOPER
WRIST GUARD

TOY

def   An artifact originally created to be a plaything; may be representational (i.e., a small-sized reproduction of a functional object, a person or a creature) or non-representational (e.g., a ball, a top, a kite); a toy is created primarily to be played with, a craft object is primarily for display (see CREATIVE ART, Category 7); see also GAME, SPORTS EQUIPMENT and RECREATIONAL DEVICE

ref   (27) (29) (68)

note use as an object name either one of the following terms or, for a representational toy, any other acceptable object name

BALL
BANK
BEADS, STRINGING
BEANBAG
BELL TOY
Bilboquet
        use CUP AND BALL
BLOCK
BLOCK, BUILDING
BLOCK, PARQUETRY
BLOCK, TELESCOPIC
CAP EXPLODER
CAP PISTOL
Chinese puzzle
        use BLOCKS, PARQUETRY

Figure 4
Sample Lexicon Page
Hierarchical

SHIELD . . . . MINING T & E
SHIN GUARD . . . . SPORTS EQUIPMENT
SHINGLE BUTTER . . . . WOODWORKING T&E
SHIRT . . . . CLOTHING, OUTERWEAR
SHIRT, POLO . . . . CLOTHING, OUTERWEAR
Shirt, T
    use T-SHIRT
SHOCKER, CORN . . . . AGRICULTURAL T&E
SHOE . . . . CLOTHING, FOOTWEAR
SHOE . . . . GAME
SHOE, TENNIS . . . . CLOTHING, FOOTWEAR
SHOE, TOE . . . . CLOTHING, FOOTWEAR
Shoe spreader
    use TONGS, SHOE-SPREADING
SHOEHORN . . . . TOILET ARTICLE
SHOEING STAND . . . . METALWORKING T&E
SHOESHINE KIT . . . . BUILDING ACCESSORY
SHOESHINE KIT . . . . PERSONAL GEAR
SHOETREE . . . . BUILDING ACCESSORY
SHOFAR . . . . CEREMONIAL ARTIFACT
SHOOTING BOARD . . . . WOODWORKING T&E
    rt MITER SHOOTING BOARD
SHOOTING STICK . . . . PERSONAL GEAR
SHOOTING STICK . . . . PRINTING T&E
SHOP . . . . BUILDING
SHORTS . . . . CLOTHING, OUTERWEAR
SHORTS . . . . CLOTHING, UNDERWEAR
SHORTS, BOXER . . . . CLOTHING, UNDERWEAR
SHOULDER LOOP . . . . PERSONAL SYMBOL
SHOULDER MARK . . . . PERSONAL SYMBOL
SHOVEL, BLACKSMITH'S . . . . METALWORKING T&E
SHOVEL, GRAIN . . . . AGRICULTURAL T&E
Shovel, Potato
    use FORK, VEGETABLE SCOOP
SHOVEL, POWER . . . . CONSTRUCTION T&E
Shrank
    use WARDROBE
SHREDDER, FLAIL . . . . AGRICULTURAL T&E
Shredder, Stalk
    use CUTTER, STALK
SHRINE . . . . BUILDING
    rt MONUMENT
SHRINE . . . . CEREMONIAL ARTIFACT
    rt RELIQUARY
SHRINKER, TIRE/AXLE . . . . METALWORKING T&E
SHRINKING MACHINE, COMPRESSIVE . . TEXTILEWORKING T&E
SHROUD . . . . PERSONAL SYMBOL

Figure 5
Sample Lexicon Page
Alphabetical

14

It is anticipated that the lexicon will be used principally in one of two ways: (1) by a person identifying an artifact for purposes of preparing a new museum catalog entry, and (2) by a person searching a catalog for records pertaining to a particular group of objects.

Use of the lexicon to identify a new artifact involves, first, selecting the appropriate major artifact category (from Figure 2), and then going to the list of acceptable classification terms (Figure 3) to choose the term that best fits the artifact. In practice the classification terms are sufficiently few in number so that a curator responsible for only certain types of collections can quickly reduce to memory those that are most frequently used. Once the appropriate classification term has been selected, a person normally would turn to the hierarchical section of the lexicon in order to find the object name for the artifact.

Use of the lexicon as an aid to searching a catalog involves a procedure somewhat different from its use in identifying a new artifact. The first search step would be to determine that the same lexicon was actually used when the catalog records were created originally. Consistency of terminology between cataloging and searching, of course, is what the lexicon is all about. Once past this hurdle, if we assume that a searcher is interested in locating all of the records pertaining to a particular kind of object--perhaps all of the engines in the collection--the next step would be to turn to the alphabetic section of the lexicon. There it is shown that engines might be found in four sections of the catalog, under the classification terms POWER PRODUCTION T&E, AGRICULTURAL T&E, MINING T&E and TOY. At this point he could go to the catalog, confident of finding all of the possibly appropriate artifacts.

In a computerized system information retrieval can vary considerably depending upon the particular computer and the package of computer programs. However, the same principles apply. A search for the word ENGINE could be made within the data category "Object Name", and the records on all engines would be retrieved, regardless of the classification terms used when different engines were cataloged originally. Or, as an alternative, the search could be restricted to engines that are also classified as toys, or it could be restricted even further to select out only toy engines, say, which originated in England, or it could be narrowed in many other ways.

The methods used to search museum catalogs will always vary depending upon the way in which the catalog is maintained physically. Regardless of the cataloging method, though, a meaningful and comprehensive search is possible only when the person retrieving the records has available a knowledge of the terminology used to create the records originally, and only when that terminology was used consistently to create the original records. It appears as though the only way these ends can be achieved is by using a lexicon such as that described, both as an adjunct to the initial museum activity of identification and during all of the ongoing museum activities which involve retrieval of catalog records.

A lexicon will not solve all museum cataloging problems. In fact it will not serve as a basis even for the complete identification of every man-made object. Subsidiary style names, materials, and, perhaps, other information is necessary for the identification of some collections. However, the lexicon will provide a common starting point in the Indentification activity which, as we have seen, is crucial to the cataloging effort in every museum.

15

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17