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The Arts and Architecture Thesaurus (AAT)
A critical appraisal

A longer version giving more examples and an analysis of the individual hierarchies is available from the author.

1 Introduction: Thesauri in information retrieval

What is a thesaurus and what is its purpose? Describing the functions of a thesaurus in a nutshell will provide the background for a critical examination of the AAT. A thesaurus is a structured collection of concepts and terms for the purpose of improving the retrieval of information. A thesaurus should help the searcher to find good search terms, whether they be descriptors from a controlled vocabulary or the manifold terms needed for a comprehensive free-text search — all the various terms that are used in texts to express the search concept. Most thesauri establish a controlled vocabulary, a standardized terminology, in which each concept is represented by one term, a descriptor, that is used in indexing and can thus be used with confidence in searching; in such a system the thesaurus must support the indexer in identifying all descriptors that should be assigned to a document or other object in light of the questions that are likely to be asked. A good thesaurus provides, through its hierarchy augmented by associative relationships between concepts, a semantic road map for searchers and indexers and anybody else interested in an orderly grasp of a subject field.

A good thesaurus can be used for automatic search query expansion in two ways:

(1) synonym expansion, adding all the synonyms for a search term needed for free-text searching. For example,

color proofs	add	color separations
barrel vaults	add	cradle vaults, tunnel vaults, wagon vaults, wagonhead vaults
bluish gray	add	aqua gray, baby blue, blue black, blue gray, centroid color 191, light Payne's gray, pewter, powder blue, slate

(2) hierarchic expansion, adding all the narrower terms for a search term (also called inclusive searching). This is needed whether one searches with a controlled vocabulary or free-text, for example,

humanities	add	arts, linguistics, literature, philosophy, history, etc.
gold	add	electrum, chryselephantine sculpture
barrel vaults	add	annular vaults, half barrel vaults, rampant barrel vaults, spiral vaults
saints	add	**hagiography**, **hagiographies**

Synonym and hierarchic expansion require that synonym and hierarchic relationships be recorded completely and explicitly in the thesaurus.

A good thesaurus provides guidance to the indexers. In the approach of **request-oriented indexing** (or **user-oriented indexing**) the concepts to be included in the thesaurus are collected from actual and expected search requests. They are then organized into an easily grasped structure that serves as a framework or checklist for the indexer in analyzing objects or documents. The users have told the thesaurus builder what they are interested in and the thesaurus builder has organized these interests into a logical framework that communicates user interests to the indexer. The indexer can now consider these interests in analyzing documents, making sure that an object or document will be assigned all descriptors under which a user may want to find them. Request-oriented indexing requires a well-structured thesaurus; it depends on the semantic road map provided by the thesaurus. Request-oriented indexing starts with a hierarchical display, using the alphabetical display only for augmentation.

The AAT indexing instructions (vol. 6, ch. 2) espouse an approach to indexing in which the indexer first does a conceptual analysis of the item to be indexed. This analysis, while it should consider the needs of the user community, is done independently from the thesaurus, not informed by the thesaurus structure. It results in a list of concepts expressed in the indexer's own terms. The thesaurus comes into play only in the second step, translating the concepts into AAT descriptors. This step starts with the alphabetical display, looking up the indexer's own terms, finding the corresponding AAT descriptors, and then locating the descriptors in the hierarchy to verify that they provide the best fit or to find a better descriptor in the hierarchical neighborhood. While this method does not depend as heavily on good thesaurus structure as request-oriented indexing, it still profits from good structure.

Good thesaurus structure is even more important for searching. It helps the user to form a well-structured image of the search topic and how it fits in the overall scheme of things. A good and complete hierarchy is essential for hierarchic expansion of search terms — a searching device whose importance can hardly be overstated. It is here that the knowledge incorporated in a good thesaurus is brought to bear on improving search results; we could speak of knowledge-based search support.

Thesaurus structure will be the key concern in this review.

2 Usage and scope

The AAT will be an important tool for indexing any kind of item (text, image, object) in "archives and special collections, libraries, museums, and visual resources collections" (vol. 6, p. 81). It can indeed "be used to describe objects collected by a wide variety of museums, the visual surrogates of these objects (slides, photographs, etc.), the documents and records held in archives and special collections, and literature about art and architecture." (vol. 6, p. IVX)

The scope is defined in the introduction as "fine arts, architecture, decorative art, and material culture of the Western world from antiquity to the present" (vol. 1, p. 30); the scope includes conservation. "Material culture" is pragmatically limited to descriptors useful for the description of objects likely to be encountered in museum collections ("broad-based material culture collections", vol. 6, p.183). "An effort has been made to include vocabulary used by archivists, museum curators and registrars, visual resources curators, librarians, and other information professionals who organize and describe information in the areas covered by the thesaurus." (vol. 1, p. 33) Concepts from literature, theater, film, and music are covered only as they are needed within the focus on fine arts. Thus *Fine arts and architecture thesaurus* would be a more accurate title. On the other hand, in many areas, notably FL **Styles and periods**, the thesaurus covers the entire world, not just the Western world. Other areas are limited, such KM101 <*religious holidays*>, which lists only Christian and Jewish holidays.

The thesaurus has many descriptors to specify what is depicted in a work of art, but descriptors for the human form and anatomy (such as **head**, **hand**) are missing, and corresponding descriptors for objects from the plant and animal world, while scattered here and there, are not included systematically.

Potential users must note two other important exclusions. There is no section devoted to methods in art history, even though individual terms may be found here and there. Furthermore, as explained in the editorial policy, the thesaurus makes no specific effort to cover iconographic themes. Information systems serving art history (bibliographic systems or systems covering art objects) will need to supplement in these areas from other sources. "The AAT was not intended to cover all elements that may be required for indexing." Other vocabularies recommended include *ICONCLASS*, which "contains iconographic descriptions having thematic and symbolic significance beyond the level of Object Names, Events, and Associated Concepts", the *LC Thesaurus for Graphic Materials (LCTGM)*, which "contains a broader range of topical terms at an in-depth level of pictorial detail. . . . ", and the *Thesaurus of Geographic Names* under development by the Getty Art History Project. (vol. 6, p. 37, 92). The user must also turn to other sources for a classification of languages which may be needed in the description of records. It might be helpful for the AAT to give an official list of such "auxiliary thesauri" to be used to assure consistency among AAT users.

The AAT is a monumental work. In five volumes it gives 24,500 descriptors, 2,750 guide terms, and about 20,000 synonyms (descriptor **color proofs**, synonym *color separations*), or about 47,000 terms. If one counts the approximately 16,000 Alternate Terms (mostly singular/plural

variations, such as ALT *color proof*), the approximately 27,000 permutations (*proofs, color*) plus 2,000 British variations (UK *colour proofs*), there are over 90,000 terms. The editorial staff has almost 20 members, close to 250 people participated in review teams. The list of sources used to verify terms takes 140 pages.

3 Sources and descriptor selection

Six existing broad-based vocabularies already in use in the field served as the principal sources of concepts and terms.

> *Avery Index to Architectural Periodicals*
> *BHA (Bibliography of the History of Art)*
> *Library of Congress Subject Headings (LCSH)*
> *Revised Nomenclature for Museum Cataloging*
> *RIBA Architectural Periodicals Index*
> *RILA (International Repertory of the Literature of Art)* (vol. 1, p. 33)

Smaller, specialized sources were also used: Kelly and Judd's *Color: Universal language and dictionary of color names* and "other well-known color-order systems" (vol. 1, p. 324), Engst and Hickerson's *Form Terms for Archives and Manuscript Control* ("provided the basis for what is now the Information Forms hierarchy") (vol. 6, p. 96), and the *spheres of activities and processes* list created by a group of state archivists ("was incorporated in the AAT Functions hierarchy") (vol. 6, p. 97). Further terms were drawn "from authoritative literature and the advice of experts in the fields of art, architecture, decorative arts, and material culture." (vol. 6, p. 75) "Another source of terminology, the users of AAT, is extremely important as well. AAT users are encouraged to submit candidate terms to be considered for inclusion in the thesaurus and to communicate to the editorial staff their comments on existing terminology." (vol. 6, p. 75) However, there is no mention of a systematic effort to collect search requests from actual end users and use these requests as a source.

The compilers have done a comprehensive job of collecting terms and selecting descriptors. Even in a work of this magnitude it is unavoidable that concepts are overlooked. For example, while old photograph sizes (mostly used for daguerreotypes) are given under DC111 <*size: photograph formats*>, modern photograph sizes are not, possibly because there are often no terms, just measurements. Only a handful of scripts and alphabets are given in PJ3434 **scripts (writings)**.

4 Overall structure

The AAT consists of two major parts: The hierarchical display and the alphabetical display. Figures 1 - 3 show the top-level outline of the hierarchy, a sample page of the hierarchical display, and a sample page of the alphabetical display (showing two columns instead of three). The alphabetical display links to the hierarchical display through term numbers, such as MT327,

which lead to the proper place in the hierarchy. The hierarchy lists primarily descriptors, such as VC557 **direct metal sculpture** or KD209 **behavioral sciences** (in bold type), but also includes a number of *guide terms*, such as VC551 <*sculpture by technique*> or KD42 <*linguistics and related disciplines*> (non-bold italics enclosed in <>). Guide terms are used as headings of minor facets or simply as terms needed as headings in the hierarchy but not verifiable in a source. (See the section on the form of terms for a fuller discussion.) The alphabetical display lists descriptors and guide terms, synonyms such as **scuffing** USE dragging (a painting technique) or **statuettes** USE figurines, and permutations, such as **sculpture, direct metal**. For descriptors, the alphabetical display gives often a scope note and other information, see the section on thesaurus format for a detailed discussion.

The hierarchical display is the heart of a good thesaurus - the semantic road map. The editors of the AAT are to be congratulated for developing a structured hierarchical display in its own right and placing it before the alphabetical display. Many thesauri either do not include a hierarchical display, or tack on a hierarchical display at the end, almost like an afterthought, slapped together by a computer program from the BT/NT relationships given in the alphabetical main part.

The next section examines the conceptual structure of the AAT and the logic of its hierarchy.

5 Conceptual structure of the AAT

This section discusses first the fundamental principle of building compound concepts from elemental concepts — just like building molecules from atoms — as it is applied in the AAT. It then examines the structure of the AAT hierarchy.

5.1 Facets and concept combination

The introductory material repeatedly emphasizes that AAT descriptors are single concepts: "Each descriptor included in the AAT represents a single concept" (Introduction, vol.1, p. 33). And again, "A descriptor in the AAT is a single unit from any hierarchy. AAT descriptors may be single- or multi-word terms, but in all cases they signify a single concept." (vol. 6, p. 42)

The descriptors are arrayed in *facets*. A facet arrangement groups concepts by the role they play in relationships to other concepts — by their syntactic role, so to speak. Examples are given in Figure 4.

Several elemental (single-concept) descriptors can be combined to build a **modified descriptor**, as shown in the following example:

Rococo carved gilded wood chairs

Facet	**Descriptor no. and text**		
F Styles and Periods	FL3265	Rococo	modifier
K Activities	KT911	carved	modifier
K Activities	KT139	gilded	modifier
M Materials	MT2670	wood	modifier
T Objects	TC449	chairs	focus

Elements are combined in the sequence of the AAT facets; the AAT facet order has been chosen so that this rule produces in many cases the most natural order of modifiers. Elements from the same facet are arranged alphabetically. (In the example, *Rococo gilded carved wood chairs* would make more sense, joining the activity applied first more closely to the object.)

Another example is

quarter plate deteriorated negatives

The principle of combining elemental descriptors to form compound concepts gives great flexibility; it makes it possible to express a myriad of very specific object descriptions and other combinations by means of a limited basic vocabulary.

Building modified descriptors is the first level of combination. Descriptors (modified or not) can be further combined into **strings**, for example

Rococo gilded carved wood chairs — collecting

paper — restoration — archivists (the restoration of paper by archivists)

Elements within a string are arranged in reverse facet order; again in many cases this results in the most natural order. In addition to AAT descriptors, a string can contain place names and dates, for example

The restoration of wood chairs in New York in 1980

wood chairs — restoration — New York — 1980

Consider a more complex example:

The restoration of nineteenth-century Massachusetts wood chairs in New York in 1980

1800-1899 and **Massachusetts** being modifiers of **chair** in the same way as **wood**, the most logical representation of this concept is

1800-1899 Massachusetts wood chairs — restoration — New York — 1980

Since the AAT rules do not allow place names and dates as modifiers, the AAT manual gives the following, less natural string

wood chairs — Massachusetts — 1800-1899 — restoration — New York — 1980

Detailed rules for forming modified descriptors and strings are given in vol. 6, ch. 3.

The scheme outlined is simple and logical and quite useful in many cases, but alas, reality is not always so neat. The AAT structure does not address the complexities that arise in the application of this scheme and creates some difficulties of its own by introducing precombined descriptors. The remainder of this section unfolds these complexities.

First, some single concepts are hard to place. For example, Facet D **Physical attributes** includes the hierarchy DE **Conditions and effects**, including such descriptors as DE34 **rust** or DE39 **oxidative-reductive deterioration**, yet some concepts one might expect here are found in the Facet K **Activities**, Hierarchy KT **Processes and techniques**, under KT224 *<condition-changing processes>*, for example, KT231 **deterioration**. For another example, the materials facet contains many descriptors that can be viewed as material or as objects or components of objects, for example MT71 **brick**, which is more an object or component, or MT1661 **tile**, which really describes a form, not a material, as evident from the scope note and from MT156 **ceramic tile**. Thus many of the facets are incomplete taken by themselves; while the introductions to the individual hierarchies make some of the necessary connections, the reader within a hierarchy is not aided by cross-references.

Second, there are many "minor" facets **within** the individual hierarchies. For example,

PC204 **lighting**
PC205 *<lighting by function>*
PC207 **decorative lighting**
PC210 *<lighting by location or context>*
PC211 **exterior lighting**

exterior decorative lighting

must be expressed as a modified descriptor

decorative lighting exterior lighting

Figure 5 gives a much more complex example of this situation. How to index these topics:

composite black-and-white aerial photograph published in a newspaper

later chromogenic color print

Minor facets are not always explicit. VC311 **copy prints** and VC312 **later prints** are not grouped under a heading <*photographic print by time when made*>. Indexing *computer-produced fantastic commercial art* requires a combination of three descriptors under BM173 <*art genres*>: **fantastic art**, **computer art**, and **commercial art**, each belonging to a different facet, even though this is not made explicit in the AAT. See Figure 7.

Third, the announcements to the contrary notwithstanding, the AAT enumerates a great many precombined descriptors. This is not bad, but it needs to be acknowledged and considered in the instructions for using the thesaurus. Furthermore, it makes the real concept relationships more complex and the failure of the AAT to provide adequate cross-referencing even more noticeable. This point warrants further elaboration and illustration.

Both **decorative lighting** and **exterior lighting** are precombined. Given the proper elemental AAT descriptors, they could be built as modified descriptors. However, there is no general facet *location or context*, and thus no descriptor **outdoors** (or **exterior** in the sense of "outside a building"; DC325 **exterior** has a more general meaning). Nor is there a descriptor **decorative**. In these examples, one of the components (**lighting)** is an AAT descriptor, but the other component (**outdoors** or **decorative**, resp.) is not, indicating a lapse in the conceptual analysis. Another example is VC358 **black-and-white slides**; the elemental concept **black-and-white** is not represented by an AAT descriptor even though it is widely applicable throughout the graphical arts and any other form of display. VC295 **gelatin silver negatives** is another of the many precombined descriptors in Figure 5; this time, both components, KT526 **gelatin silver process** and VC285 **negatives**, are AAT descriptors.

{We can give many more examples to illustrate this point. RK661 **libraries (buildings)** is a precombined descriptor, combining a type of organization with RK4 **buildings**; the same is true for RK665 **public libraries**, which really means **public library buildings**. While there is a list of library types (such as public libraries, presidential libraries) under RK661 **libraries (buildings)**, there is no such list under HN131 **library service agencies** in the **Organizations** hierarchy, where it properly belongs.}

{BM191 **funerary art**, KM29 **funerals**, PE63 **funerary objects**, RK424 <*funerary structures*>, TC174 **funerary palls**, TC231 **mourning quilts**, TQ139 <*funerary containers*>, VC515 **funerary sculpture**, RK424 <*funerary structures*> and others all share the component **funerary**, which again is not represented by an AAT descriptor. There is a cross-reference from PE63 **funerary objects** to KM29 **funerals**, TQ139 <*funerary containers*>, and VC515 **funerary sculpture**, but not to the other descriptors listed. There are no cross-references under BM191 **funerary art**, and there are no cross-references to religion-related descriptors.}

TH1137 **marvers** is a precombined descriptor with the components KT1040 **marvering** and TH1 **equipment**. In fact, **marvering equipment** would be a perfectly legal modified descriptor, but since **marvers** is a descriptor, it must be used. The same is true for VC321 **chromogenic color print**, which must be used in preference to the combination KT556 **chromogenic processes** + VC317 **color prints (photographs)**. Contrast this with **cutting (glassworking) equipment**; here the modified descriptor (KT1032 **cutting (glassworking)** + TH1 **equipment**) must be used, since there is no descriptor for this compound concept. This modified descriptor (and others like it) would **not** be found in a hierarchically expanded search for TH1134 <*glassworking equipment*>.

The last example illustrates the problem of how to relate processes and techniques to the equipment that actually applies these processes and techniques, a problem that has perennially plagued classifiers. Representing all equipment through combinations built by the indexer is not satisfactory, since specific equipment can often not be expressed by such a combination. It is better to include specific descriptors for equipment where needed and rely on combination otherwise. This approach requires complete articulation between the **processes and techniques** hierarchy and the **equipment** hierarchy.

A final complication is illustrated by the following example

VC538 **bronzes**
SN Use collectively for the class of sculpture executed in bronze, especially figures or figurine groups. When possible, use the material term plus a more specific object name, such as **bronze** + **figurines**.

There are hundreds of possible combinations such as **lead bronze high reliefs** or **bronze nudes**. A search for the descriptor **bronzes**, even if hierarchically expanded, will not find any of them. The problem arises from enumerating a broad precombined descriptor but relying on building modified descriptors for more specific combinations. It would be better not to have a descriptor **bronzes** and use the combination MT396 **bronze** + VC502 **sculpture** instead. If each component is hierarchically expanded, a search will find all types of bronze sculptures.

5.2 The structure of the hierarchy

Structuring a set of descriptors as vast as that included in the AAT is a gargantuan undertaking that needs to proceed through many steps of refinement. A second (and third, and fourth) look will always detect mistakes, relationships not considered, possibilities for improvement. This is even more true for a look by a new pair of eyes. Thus the critical examination that follows should not detract from the accomplishment manifest in the AAT hierarchy as it brings together many useful and specific groupings of concepts.

As the examples below illustrate, the daunting task of organizing the 24,000 concepts into a coherent and helpful structure has only just begun; the AAT has still a way to go to fulfil its potential as a tool that gives a structured and easily comprehensible view of the art field and gives full support to indexing and, above all, searching.

5.2.1 Overall structure of the hierarchy

The overall layout of the hierarchy as shown in Figure 1 is based on two principles:

(1) Group concepts by facet first and group by subject within facets as appropriate.

(2) Arrange concepts from the general to the specific, or from "abstract concepts to concrete artifacts" (vol. 6, p. 38).

We will examine these two principles in turn.

By grouping concepts according to syntactic role, a facet arrangement disperses concepts that belong to the same subject area, thus neglecting groupings that might be more natural and useful. Consider

PC233	fire extinguishing systems [**Object Groupings and Systems**]
PJ940	<*fire extinguishing system components*> [**Components**]
TH950	firefighting equipment (incl. fire extinguishers) [**Objects**]

Another example is the dispersal of descriptors related to the organization of information to HN124 **information services** (under organizations), KG106 <*information handling functions*> (includes authority control), PC83 <*information artifact groupings*> (includes files, authority files), and VW1 <*information forms*>.

A more extensive example is given in Figure 6.

The separation of descriptors that should be together is all the more unhelpful as cross-references are very sparse (see discussion below). The alphabetical display brings some of the dispersed descriptors together (those that share a word) and thus helps the user in assembling a list of search terms, but this does not support automatic hierarchical expansion. Intelligent search support requires more thorough and explicit structuring.

On the other hand, grouping by facets works well in some cases, such as **Color**, which is clearly a useful grouping that stands on its own, independent from any subject. The same may be true for **Styles and Periods**, even though some concepts there depend on the branch of art. **Materials by composition** is another candidate for an independent facet, while **Materials by function** might be divided into pieces to be grouped with subjects.

The best strategy to achieve a helpful arrangement is the following: Pull out those facets that clearly stand out on their own and that can be pulled out without dispersing descriptors belonging to the same subject area. Arrange the other descriptors by subject. Use the same principle within a large subject area: Pull out subject-wide facets, arrange the remaining descriptors by subject subdivisions, etc. Some of the within-subject facets will come from a general facet scheme, others will be specific to the subject or subject subdivision.

The second principle used for arranging descriptors in the AAT is to proceed from the general to the specific, or from "abstract concepts to concrete artifacts" (vol. 6, p. 38); as a result, the sequence starts with **Associated Concepts**, which are at the periphery of the scope (and not really a facet anyhow), and ends with **Objects**, which are at the center of the scope. The overall sequence should convey an image of the structure of the field and also guide the indexers as they focus their attention on different aspects of a document or other object; the degree of generality is a secondary criterion.

The introductory material states that the "progression of the AAT facets corresponds to the indexing process" (vol. 6, p. 37). In fact, the sequence of facets corresponds to the indexing result, the sequence of AAT descriptors in building a modified descriptor; it hardly corresponds to the indexing process, the sequence in which the indexer analyzes an object. Surely the indexer determines first the basic type of the object, choosing a descriptor from the **Objects** facet, and then proceeds to identifying the modifying characteristics. Vol. 6, p. 81-85 summarizes the AAT areas of interest to archives, museums, and visual resources collections, respectively; it invariably starts out with objects or elements of the **Objects** facet. So, why not arrange the descriptors in the most cogent semantic map of the field that leads the indexers and searcher trough a natural process of object or query specification, and indicate facet order through a facet indicator letter at the end of the term numbers?

5.2.2 Relationships augmenting the monohierarchical display

Perhaps the most serious shortcoming of the AAT hierarchy is its monohierarchical nature. A monohierarchical system forces the rich and multi-faceted relationships among concepts into a straightjacket in which each concept is allowed only one broader concept. A monohierarchical arrangement can show but a fraction of the hierarchical relationships that exist between concepts and that are needed to assist indexers and searchers. This is all the more true in a thesaurus that contains many precombined descriptors. Thus there are many, many relationships not shown by the arrangement in the AAT hierarchical display. These relationships — the relationships not implied by the arrangement — must be shown by an extensive network of cross-references. However, in the AAT, hierarchical cross-references are not included, and Related Term cross-references are very sparse and appear only in the alphabetical display.

We have already discussed some of the problems this absence of cross-references creates. Figure 6 shows descriptors from the same subject area dispersed in many places; they should at least be linked through cross-references, but most often they are not. The following examples illustrate the point further.

The introduction to the **Recreational Artifacts** hierarchy (TV) recognizes that there are many descriptors that should be included but are listed at another place where they also belong, and does make some general cross-references:

> **Relation to Other Hierarchies** Descriptors for sets of recreational artifacts (e.g., **chess sets**) are found in the Object Groupings and Systems hierarchy. Descriptors for sports

> and athletic equipment worn on the body (e.g., **helmets**) are found in the Costume hierarchy. Descriptors for objects used in sports but originally intended or based closely on offensive or defensive weapons (e.g., **épées, javelins**) are found in the Weapons and Ammunition hierarchy. [Yet TV63 **sporting firearms** are under Recreational Artifacts!]. Descriptors for objects that can be used in sports or play but are primarily or originally intended to carry people or goods over a distance (e.g., **sleds, canoes**) are found in the Transportation Vehicles hierarchy. Types of figural representations not intended as toys are found in the Visual Works hierarchy (e.g., **kachina dolls**).

But specific cross-references within the hierarchy itself are missing.

The introduction to the **information forms** hierarchy (VW, vol. 2, p. 507) clearly recognizes the problem of polyhierarchy, but again nothing is done about it in the hierarchy:

> "Wherever possible, documents serving uniquely as records in a particular type of context or institution are placed in this section in the categories under **records**, rather than by their general form or function. Thus, for example, VW698 **marriage certificates** appears as a narrower term under VW696 **marriage records** [which is in the hierarchical chain VW331 <*document genres by function*> — VW513 **records** — VW514 <*records by form or function*> — VW688 **vital statistics records**] rather than under VW334 **certificates** [in VW331 <*document genres by function*>]." (Term numbers added for easier orientation.)

Clearly there should be cross-references like

> VW334 **certificates**
> NT VW698 marriage certificates

Again, the argument that the user can always find **marriage certificates** under **certificates, marriage** in the alphabetical index does not hold. The semantic structure of a concept is not always expressed so explicitly through the term (see some of the examples below), and the hierarchy needs to stand on its own, if it is to guide the indexer and support hierarchical expansion in searching.

Other examples of missing cross-references

RK1061 **mosques**
BT BM503 Islam [or at least RT]

BM16 **religious symbolism**
BT BM518 religious concepts

KD2 **humanities**
NT <*history and related disciplines*>
(which is grouped with KD202 social sciences)

MT416 **gold**
NT VC539 chryselephantine sculpture [or RT]

MT1322 **ivory**
NT VC539 chryselephantine sculpture [or RT]

MT2364 **photographic material**
NT MT1481 photographic paper [under MT1463 paper by function]

A number of relationships **are** included (but, as all relationships, listed only in the alphabetical display). All relationships are RT (Related Term), even if BT (Broader Term) or NT (Narrower Term) would be more appropriate; there is no provision for BT/NT relationships in the AAT.

BM193 **nonrepresentational art**
RT FL3380 Nonobjective [art]
[Note: nonrepresentational art is the general descriptor, nonobjective is used for 20th-century art]

TN333 **exposure meters**
RT TH768 <*camera accessories*>

5.2.3 Microstructure of the hierarchy

A hierarchical arrangement should convey to the reader a sense of order, a sense of grasping the structure of a whole field or of a small segment, allowing her to build an orderly image in her own mind. Clear structure supports good descriptor selection by bringing closely related or contrasting descriptors close together. Clear structure also allows the thesaurus editor to spot missing concepts. The AAT hierarchy DL **Color** is a nice example of well-structuredness: the colors are arranged in spectral sequence (the most natural and logical arrangement), and hues within each color are arranged according to a consistent schema. In contrast, in the other AAT hierarchies descriptors on the same hierarchical level are arranged in alphabetical order, depriving the reader of that sense of order. Consider the following two arrangements; which is more satisfying to the mind?

DC111	<*size: photograph formats*>
DC112	**double whole plate**
DC113	**half plate**
DC114	**ninth plate**
DC115	**mammoth plate**
DC116	**quarter plate**
DC117	**sixteenth plate**
DC118	**sixth plate**
DC119	**whole plate**

DC111	<*size: photograph formats*>
DC112	**sixteenth plate**
DC113	**ninth plate**
DC114	**sixth plate**
DC115	**quarter plate**
DC116	**half plate**
DC117	**whole plate**
DC118	**double whole plate**
DC119	**mammoth plate**

For another example see VK56 <*Later Western World Coins*>; the coins are arranged alphabetically by name, not by country or money system.

Fig. 7 shows a more complex example. The effort to create order brings to light several minor facets that enhance the understanding of the subject and indicate possible combinations hard to detect from the alphabetical sequence. Still further examples of sequences illustrating the advantages of meaningful order by its absence are shown in Figure 8.

5.2.4 Articulation between hierarchies using the same principle of subdivision

The user of a hierarchy has a right to expect consistency for ease of orientation. Two hierarchies that are based on the same principle of subdivision (such as subdivision by color or subdivision by discipline) should be arranged in the same way, and corresponding concepts should be cross-referenced. In the AAT, there are many hierarchies that should be parallel but are not and that should be cross-referenced but are not.

Example 1. In DL **Color** the color sequence follows the spectrum, under MT2066 <*pigment by color*> colors are arranged alphabetically. There are no cross-references linking a color and the pigment(s) producing that color.

Example 2. The sequence under HG70 **people by occupation** deviates from the sequence under KD **Disciplines** in several places. For example, in KD the sequence is KD99 **science**, KD202 **social sciences**; in HG70 it is the other way around. For another example, compare the two hierarchy excerpts under **social sciences**:

KD202	social sciences
KD203	archaeology
KD209	behavioral sciences
KD210	anthropology
KD221	<*psychology and rel. d.*>
KD231	sociology
KD237	communications
KD273	<*history and related d.*>
KD293	information science

HG439	<*people in the social sciences and related occupations*>
HG440	social scientists
HG441	anthropologists
HG446	archaeologists
HG455	<*people in history and* >
HG470	psychologists
HG471	sociologists
HG472	<*people in social science-related occupations*>
HG473	<*p. in communications*>
HG497	information scientists

In this case, the necessary cross-references (e.g., KD2 **humanities** RT HG203 <*people in the humanities*>) are there. (Of four cross-references checked, only KD237 **communications** RT HG473 <*people in communications*> is missing.)

6 Format of the AAT

This section discusses the form in which the descriptors and their relationships are expressed, dealing first with the form of the individual terms and then with the format of the two main parts, the hierarchical display and the alphabetical display.

6.1 Choice and form of terms

Strict standards were applied for descriptor selection:

> Each *AAT* descriptor, no matter what its source, must be validated against the literature of the field. Each descriptor is checked in several sources in order to establish its form and meaning and to ensure that all word forms (i.e., synonyms and alternate spellings) are included. The actual form of a descriptor must have literary warrant. It is not enough that the concept a descriptor denotes is discussed within the body of a text; the term itself must be used in the text. (Introduction, vol. 1, p. 34)

However, the real measure for selecting a concept as descriptor should be its usefulness for retrieval. A concept may never be explicitly mentioned in any text yet offer a useful perspective for retrieval; indeed, one of the most important tasks in thesaurus-building is to identify and define such concepts in the course of the conceptual analysis. Once a concept has been selected as descriptor, one should find the most appropriate term and verify it in the literature. But if no suitable term is found, the lexicographer must invent one. New concepts often emerge as the hierarchy is developed. If a proper broad concept does not happen to have a term that is verifiable in the literature, AAT introduces a "guide term", printed in the hierarchical display in non-bold italics enclosed in <>, for example, KD42 <*linguistics and related disciplines*>. Conceptually, this has the same status as KD209 **behavioral sciences**; there just does not happen to be a term in vogue.

The distinction between guide terms and descriptors is not helpful. As an example, consider this text from the introduction for Styles and Periods:

> The second section, <*styles and periods by region*> . . . is divided into the following: **African**, <*The Americas*>, **Asian**, <*Early Western World*>, **European**, <*The Islamic World*>, **Oceanic**, and <*international post-1945 styles and movements*>.

This is terrible to read, and it is no better in the hierarchies, particularly since the italics make the headings stand out less then the bold-face descriptors under them. All the guide terms in this quote would be perfectly useful descriptors, but they are not available for indexing; in the right searching system, they might be available for inclusive searching. The only result of this practice is confusion of the reader.

Descriptors should be formulated to explicitly convey the full meaning without reliance on the hierarchical context, lest confusion and misuse of descriptors reign. Usually AAT descriptors follow this rule, but there are many exceptions. For example, DC221 **automatic** refers strictly to firearms; outside its hierarchical context DC213 <*operational attributes: firearms*> this

limitation is bound to get lost. FL3379 **abstract** and FL3380 **non-objective** refer only to 20th-century art, so why not say so: **20-th-century abstract art**. HG426 **religious** means members of religious orders! (The reason for some of the short — and by themselves rather cryptic — descriptors is no doubt their use in building modified descriptors that read well, such as **abstract paintings** as opposed to **nonrepresentational art paintings**, but what reads well often does not retrieve well.) RK665 **public libraries** (under RK661 **libraries (buildings)** is used for the meaning **public library buildings**; an indexer using only the alphabetical display might well build the modified descriptor **public library catalogs** (there is no descriptor for the public library as an institution). FL982 **Classic** is used in the meaning of "the style of the Classic Mesoamerican period" and FL2666 **Classical** is used in the meaning of "Greek Classical style". While these terms my be unambiguous in certain scholarly communities, they are certainly not unambiguous over the wide scope of the AAT.

This points to a more general problem: Term usage was checked against the best specialized sources. Such specialized sources tend to use a specialized vocabulary that includes terms known primarily within a special field or general terms used in a specific meaning **in the special field**. Such terms are not always suitable for a broad-based thesaurus, such as the AAT, that addresses a wide audience. Here one must strive to select or formulate terms that are immediately understood by any member of that audience and that are unambiguous not only in a narrow field but in the broad scope of the AAT. For example, TX414 **transports**, chosen as descriptor in the AAT, may be the proper technical term, but the synonym **transport ships** is certainly clearer to the general user and avoids the ambiguity with transport as an activity.

The most serious problems of non-specific term expression is found in the **Styles and Periods** hierarchy, where names for geographical places, for people, and for political units are used throughout to mean the styles associated with them. For example, under FL2333 <*Indian architecture styles*> one finds FL2334 **Dravidian** and FL2336 **Kalinga**, the name of a group of people and of an ancient kingdom in India. Again, it would not be surprising to find an indexer forming the modified descriptor **Dravidian language**.

A closely related problem is the treatment of homonyms. All homonyms should be disambiguated with a qualifier, even if only one meaning is represented in the thesaurus. Thus, MT1452 **museum board** should be **museum board (material)**, and BM878 **equity** should be **equity (residual value)**. Another example is the plain term VC609 **genre** which is defined as "pictorial representations . . . that represent scenes or events from everyday life; usually used with another term . . ."; there are other uses of genre in the thesaurus, such as BM160 <*genres in the arts*> or VW2 <*document genres*>.

When there are two or more meanings of a homonym represented in a thesaurus, all must be disambiguated. Good examples are PJ3237 **slides (aerophone components)**, **slides (barrettes)** USE [TE507] **barrettes**, TV109 **slides (recreational equipment)**, VC357 **slides (photographs)** or PC84 **files (document groupings)** and TH1075 **files (tools)**. But there are too many cases where disambiguation is missing; for example, VC299 **positives** (meaning photographs) vs. **positives (organs)** USE [TT119] **positive organs** [musical instrument]; or MT385 **copper** [the metal] and **copper (color)**.

Often the AAT relies on the distinction between singular and plural to disambiguate homonyms. Examples:

MT2535 **organ** [of the body] vs. TT110 **organs** [musical instrument] [ALT organ]

KD278 **oral history** [discipline] [No SN] vs. VW289 **oral histories** [document form] [SN, ALT]

MT397 **bronze** [material] vs. VC538 **bronzes** [bronze sculptures]

To make matters worse, in many of these cases the plural descriptor has the singular as an alternate, losing the distinction altogether. These descriptors should be explicitly disambiguated through parenthetical qualifiers: **organ (of the body)** and **organs (musical instruments)** or replaced by unambiguous terms: **bronze** and **bronze sculptures**.

The use of singular and plural as separate descriptor is frequent with processes and their results as in the following example: KT673 **copper engraving** [the process] and VC643 **copper engravings** [prints made by the process of copper engraving] (with **copper engraving** as an alternate form). The descriptors should be **copper engraving (process)** and **copper engraving (print)**.

The AAT's preference for plural is contrary to normal dictionary practice. A better rule is to prefer singular and use plural only where a sense of language requires it (as in a heading **research methods**).

6.2 Format of the hierarchical display

The hierarchical display (see Figure 2) presents descriptors (and guide terms) in a straight monohierarchical arrangement without any further information such as cross-references or scope notes. It is divided into 33 "hierarchies" grouped into 7 "facets". Each facet is preceded by a short explanation of its scope. Each hierarchy is preceded by an explanation of its scope, relationship to other hierarchies, and organization, and by a synopsis of the major subdivisions. These explanations and synopses are very useful; in fact, they should all be repeated in one place as part of the introduction to give the reader an overview of the whole thesaurus at a level somewhat more detailed than the one-page overview of the facet structure in Section 4.1 of the Introduction (vol.1, p.31-32).

Descriptors are identified through numbers such as VC.160 **perspective drawings** (called line numbers in the AAT); the dot serves no function and actually impedes readability, which is why this review omits the dot when citing term numbers.

The hierarchical level of a descriptor is shown through indention of about .2"; alternating gray and white vertical bands provide guidance in identifying the correct hierarchical level — a novel feature pioneered in the first edition of the AAT. These would be even more useful if the level

number were printed in fine type across the top of the page, and if the left edge of the descriptors were aligned with the left edge of the corresponding band.

All but ten of the 33 hierarchies have only one top-level term, identical to the title of the hierarchy; everything else is indented under it, creating a level of indention that does not convey information. The following example is even worse:

TX1 *<transportation vehicles>*
TX2 **vehicles**
everything else indented under **vehicles**

The hierarchies with more than one top term are BM, DL, FL, PC, RD, RG, RM, TK, TT, VK. Some of these are really agglomerations of two hierarchies (e.g., PC **Object Groupings and Systems**). Others, such as FL **Styles and Periods** or TT **Sound Devices**, just follow a more sensible practice than the apparent AAT norm.

To keep the hierarchical context while going from one page to the next, the AAT employs two useful devices on the top of each page: (1) The title of the hierarchy (e.g. **MATERIALS (MT)**) and (2) the hierarchic chain leading to the first descriptor on the page (see Figure 2). The hierarchic chain is needed only on left-hand pages where the hierarchical context gets lost as one turns the page; on right-hand pages this space could be saved. On the other hand, in the AAT the chain is limited to four levels, so that the highest levels are often cut off, leaving the reader without orientation. For example, consider the hierarchical chain

VC1 *<visual works>*
VC75 *<visual works by medium or technique>*
VC283 **photographs**
VC284 *<photographs by form>*
VC285 **negatives**
VC292 *<negatives by process>*
VC295 **gelatin silver negatives**

VC295 **gelatin silver negatives** is the first descriptor on a page (vol. 2, p. 487). With the four-line limit, the "hierarchical orienter" on that page is,

photographs
<photographs by form>
negatives
<negatives by process>

The overall hierarchical context is lost.

The hierarchical orienters would be even more useful with term number so that the reader could quickly locate the place of a high-level term in the full hierarchy.

The layout of the hierarchical display does not use typography to advantage. Using boldface large for high-level headings, bold for the next level, and regular type thereafter would make orientation **much** easier. As it is, all descriptors are bold normal and all "guide terms" (a dubious distinction anyhow) in light italics, a source more of confusion than of guidance.

Since the link from the alphabetical display to the hierarchical display is through term numbers, a running head showing the term number range on each page would be very helpful.

6.3 Format of the alphabetical display

The alphabetical display (see Figure 3), arranged in three columns, has entries for descriptors, spelling variants, permutations of multi-word descriptors, synonyms of descriptors, permutations of synonyms, and guide terms (but not permutations of guide terms). For lead-in terms it gives the descriptor, for descriptors it gives their term number in the hierarchical display and often a lot of information to be discussed below. Each page has a running head indicating the range of the alphabet; it appears that these running heads were entered manually rather than produced by computer, as one might expect with a thesaurus project this size.

Descriptor entries include the term number linking into the hierarchical display and, as appropriate, source indicators, **H**istory **N**ote, **ALT**ernate forms of the descriptor, **S**cope **N**ote, **U**sed **F**or terms (synonyms, permutations), and **R**elated **T**erms, as illustrated further in Figure 9. (Lines that could be dispensed with are marked with *.)

History Notes that refer to the date when a descriptor was introduced or changed are important to the user. Historical information on other changes is important to the thesaurus editors but wastes space and distracts attention in the published version.

The **ALTernate descriptor** field usually gives the singular for a plural descriptor, or vice versa, and often the possessive forms of both singular and plural; see **sculptors** in Figure 3. These alternate forms are needed for the syntactically correct construction of modified (compound) descriptors, such as *sculptors' biographies*. A more complex example is

Buddhism
BM448
ALT Buddhist

for combinations such as *Buddhist temples*. The simple rule "singular, plural, possessive, and adjective forms can be used as appropriate, especially in compound descriptors" would achieve the same objective while saving many lines.

The **Scope Notes** are extremely useful and perhaps the best feature of the AAT. Scope notes are provided for the majority of descriptors.

The **Used For** relationships fall into two classes, (1) synonyms, such as **mechanicals** UF paste-ups (2) permutations, such as **copper engraving** UF engraving, copper. Synonyms are useful to

the reader; they contribute to an understanding of the descriptor's meaning, particularly if the reader is more familiar with a synonym than with the descriptor itself. But permutations of multi-word terms do not add any information; as a further example consider

artificial inorganic brown pigment
UF brown pigment, artificial inorganic
brown pigment, synthetic inorganic
inorganic brown pigment, artificial
inorganic brown pigment, synthetic
pigment, artificial inorganic brown
pigment, synthetic inorganic brown
synthetic inorganic brown pigment

The only line that adds information is the last one. Clearly, the alphabetical display should have an entry for each of these permutations, referring to the descriptor (unless a more elegant KeyWord Out of Context index is used); thus the thesaurus data base must store these variant forms with the descriptor. But listing these variations with the descriptor in the user version only takes up space and annoys the user. Omitting these and other unneeded lines from the alphabetical display would save about 320 of its 1700 pages.

Related Terms (RT) are very useful, but all too rare. Example:

TC231 **mourning quilts**
RT funerary objects

It would be helpful to make the cross-reference RT PE63 funerary objects for direct access to that descriptor in the hierarchical display.

A more fundamental question is where scope notes, synonyms, and related terms should be given. When this information is given in the alphabetical display, a user perusing the hierarchy must turn to the alphabetical display whenever she needs a definition. On the other hand, a user should never use a descriptor for indexing or searching without having verified it in its hierarchical context; thus she must go from the alphabetical to the hierarchical display in any event. Moreover, the hierarchical context complements the information given in the scope note. Thus this information should be given in the hierarchical display, general practice notwithstanding.

For lead-in terms (terms that are not descriptors), the AAT refers the user to the appropriate descriptor:

paste-ups
USE mechanicals [better: USE VW1187 mechanicals]

engraving, copper
USE copper engraving [better: USE KT673 copper engraving]

Giving the descriptor number in the USE cross-reference would let the user go directly to the hierarchical display without a second look-up in the alphabet.

Guide terms are not permuted in the alphabetical display. Thus

DC111 *<size: photograph formats>* has no permuted entry

<photograph formats, size>

and is thus not accessible through **photograph** in the alphabetical sequence, nor is there a cross-reference from VC283 **photographs**.

KT662 *<photomechanical processes: planographic>* has no permuted entry

<planographic photomechanical processes>

The user looking under **planographic** finds only references to **planographic printing**.

7 Introductory matter

Volume 1 contains some introductory matter, but the real introduction is found in the separate volume 6. While the lengthy history in volume 1 transmits some of the "flair" of the thesaurus and helps one understand how its structure came about, it is not essential and should be omitted in the interest of space. The introduction that follows discusses briefly — but not too well — purpose, scope, and structure of the thesaurus and the elements of a full descriptor entry in the alphabetical display; it also gives instructions for the submission of new terms. Fortunately, there is a good introduction to be found in volume 6, Chapters 2 and 3; they are must reading if one wants to understand the AAT's structure and use. The chapters describing the application of the AAT in specific environments, such as archives, museums, or visual resources collections, are also quite useful. The introductory matter in vol. 1 is followed by a listing of new and changed terms and an extensive list of sources used to verify terms or to obtain scope notes.

8 Availability

The AAT is available in print form (reviewed here), in an electronic version intended for indexers and searchers, the *Art and Architecture Thesaurus, Authority Reference Tool® Edition, Version 2.0 (AAT:ART)* (vol. 6, p. 77), and in two electronic "systems" editions intended for use in conjunction with authority control, the *Art and Architecture Thesaurus, USMARC FORMAT (AAT:USMARC)* and the *Art and Architecture Thesaurus, Authority Record Edition (AAT:REC)* (vol. 6, p. 74). The two electronic "systems" editions contain information about the mapping from terms in the main AAT sources to the corresponding AAT descriptors.

9 Conclusion

The AAT assembles a large number of carefully verified concepts and terms spanning a broad scope, structures them into many useful groupings, and provides a wealth of scope notes. This is a significant achievement, resulting in a work that is useful to standardize terminology across fine arts, architecture, and material culture information systems.

However, much remains to be done to bring this work to full fruition. The structure of the AAT hierarchy has some significant drawbacks that hamper the full exploitation of its achievement:

- The hierarchy is arranged by formal facets rather than by subject, which might be more helpful. Even so, the facet analysis is not complete, and the thesaurus contains many precombined descriptors without the necessary cross-references to their elements.

- The structure is a monohierarchy that omits crucial relationships among descriptors and thus does not do justice to the complexity of the broad field of art, architecture, and material culture with its multifaceted perspectives, interrelationships, and intersections.

- Descriptors on the same level are arranged in alphabetical rather than meaningful order.

- Hierarchies that should be parallel are not articulated with each other.

To realize the full potential of the AAT for indexing and searching requires a painstaking and thorough structuring and restructuring of the hierarchy to create a polyhierarchical network of concept relationships, a rich tapestry of interwoven threads, and displaying this network in the arrangement most helpful to the user.

B **Associated concepts facet (1,018)**
BM Associated concepts (1018)

D **Physical attributes facet (890)**
DC Attributes and properties (353)
DE Conditions and effects (46)
DG Design elements (162)
DL Color (329)

F **Styles and periods facet (3,382)**
FL Styles and Periods (3,382)

H **Agents facet (1,093)**
HG People (958)
HN Organizations (135)

K **Activities facet (2,034)**
KD Disciplines (318)
KG Functions (287)
KM Events (177)
KQ Physical activities (87)
KT Processes and techniques (1,165)

M **Materials facet (2,869)**
MT Materials (2,869)

P/V **Objects facet (13,210)**
PC Object groupings and systems (202)
PE Object genres (154)
PJ Components (3,066)

R **Build Environment (1,943)**
RD Settlements and landscapes (241)
RG Built complexes and districts (287)
RK Single built works (1,185)
RM Open spaces and site elements (230)

T **Furnishings and equipment (5,592)**
TC Furnishings (1,363)
TE Costume (721)
TH Tools and equipment (1,463)
TK Weapons and ammunition (256)
TN Measuring devices (315)
TQ Containers (622)
TT Sound devices (607)
TV Recreational artifacts (183)
TX Transportation vehicles (462)

V **Visual and verbal communication (1,853)**
VC Visual works (574)
VK Exchange media (169)
VW Information forms (1,110)

Numbers in parentheses give the number of descriptors to indicate emphasis.

Figure 1. **Top-level outline**

** Needs to be done from attached copy from the AAT. Could perhaps be produced in sufficient high quality form the original AAT page

Figure 2. **Sample page from the hierarchical display**

** To be typeset from the attached copy, two columns

Figure 3. **Sample page from the alphabetical display**

Facet	Sample descriptors
physical attributes	quarter plate, opacity, vivid red
styles and periods	Rococo
agents	painters (artists), photographers
activities and processes	gilding, gelatin silver process, color photography, carving, deterioration
materials	color film, wood
objects	chairs, negatives

Figure 4. **Facets and sample descriptors**

VC1 *<visual works>*
VC2 *<visual works by form>*
VC34 *<visual works by function>*
VC70 *<visual works by location or context>*
VC75 *<visual works by medium or technique>*
VC283 **photographs**
VC284 *<photographs by form>*
VC285 negatives
VC289 *<negatives by color>*
VC290 black-and-white negatives
VC291 color negatives
VC292 *<negatives by process>*
VC295 gelatin silver negatives
VC299 positives
VC310 photographic prints
VC312 later prints
VC315 *<photographic prints by color>*
VC316 black and white prints (photographs)
VC317 color prints (photographs)
VC318 *<photographic prints by process>*
VC322 chromogenic color print
VC346 *<photographs by form: color>*
VC347 black-and-white photographs
VC348 color photographs
VC349 *<photographs by form: format>*
VC357 slides (photographs)
VC358 black-and-white slides
VC359 color slides
VC360 *<photographs by function>*
VC363 news photographs
VC364 *<photographs by technique>*
VC365 *<photographs by picture-taking technique>*
VC366 aerial photographs
VC381 *<photographs by processing or presentation technique>*
VC390 manipulated photographs
VC391 composite photographs
VC400 *<photographs by subject type>*
VC406 studio portraits

Figure 5. **Example for minor facets and precombined descriptors**

Photography

D Physical Attributes Facet, DC Attributes and Properties

DC111 *<size: photograph formats>*
DC116 quarter plate

D Physical Attributes Facet, DE Conditions and Effects

DE38 *<conditions and effects: photography>*
DE39 oxidative-reductive deterioration

H Agents Facet, HG People

HG299 photographers

K Activities Facet, KT Processes and Techniques

KT487 *<photography and photographic processes and techniques>*
KT503 photographic processes
KT526 gelatin silver process
KT567 *<photographic techniques>*
KT570 *<picture-taking techniques>*
KT571 chronophotography
KT598 *<photographic processing and presentation techniques>*
KT602 enlarging
KT616 reduction (photography)

M Materials Facet, MT Materials

MT1416 paper
MT1463 *<paper by function>*
MT1481 photographic paper
MT2364 photographic materials
MT2367 photographic film

P/V Objects Facet, TH Tools and Equipment

TH746 photographic equipment
TH747 *<cameras and camera accessories>*
TH788 *<photographic processing equipment>*
TH794 enlargers
[no reducers]

P/V Objects Facet, VC Visual Works

VC283 photographs
VC284 <*photographs by form*>
VC285 negatives
VC292 <*negatives by process*>
VC295 gelatin silver negatives
VC364 <*photographs by technique*>
VC364 <*photographs by picture-taking technique*>
VC367 chronophotographs

Figure 6. **Facet arrangement dispersing concepts from same subject area**. **Hierarchy excerpts concerning the subject Photography**

<art genres>

academic art
amateur art
apocalyptic art
art brut
children's art
commercial art
community art
SN Includes art undertaken in conjunction with particular communities, often socially deprived, usually with the idea of producing an effect or inspiring response specifically within those communities, with no reference to widely established standards. For art intended to beautify or enrich public places, use **public art**.
computer art
court art
crafts
cybernetic art
didactic art
dissident art
ethnic art
fantastic art
figurative art
folk art
funerary art
naive art
nonrepresentational art
primitive art
public art
SN Use for art whose purpose is to beautify and enrich public places. For art undertaken in conjunction with particular communities, usually to produce an effect or inspire response specifically within those communities, use **community art**.
rock art
cave art
serial art
sofa art
street art

a. **Original alphabetical sequence**

art genres

art genres by content or other intrinsic characteristics

figurative art
fantastic art
apocalyptic art
nonrepresentational art

cybernetic art

serial art

crafts

art genres by standard

academic art
folk art
dissident art

art genres by type of artist or origin

amateur art
naive art
art brut
children's art

computer art

ethnic art
primitive art

art genres by audience, purpose, or display context

sofa art
court art
public art
SN Art whose purpose is to beautify and enrich public places.
community art
SN Public art undertaken in conjunction with particular communities, often socially deprived, usually with the idea of producing an effect or inspiring response specifically within those communities, with no reference to widely established standards.
street art
rock art
cave art [prehistoric, esp. paleolithic]

didactic art
commercial art

funerary art

b. **Suggested meaningful sequence**

Figure 7. **Alphabetical vs. meaningful sequence on same hierarchical level**

VW169 **lists**
VW170 *<lists by form or function>*
VW171 **attendance lists**
VW172 **bibliographies**
VW173 **annotated bibliographies**
VW174 **national bibliographies**
VW175 **selective bibliographies**
VW176 **subject bibliographies**
VW177 **bibliographies of bibliographies**
VW178 **local bibliographies**
VW179 **systematic enumerative bibliographies**
VW180 **trade bibliographies**
VW181 **checklists**
VW182 **discographies**
VW183 **filmographies**
VW184 **inventories**
VW185 **mailing lists**
VW186 **menus**
VW187 **registers (lists)**
VW188 **cartularies**
VW189 **rosters**
VW190 **shelf lists**
VW191 **subscription lists**
VW192 **union lists**
VW193 **want lists**
VW194 *<lists by subject>*
VW195 **donor lists**
VW196 **guest registers**
VW197 **visitors' books**
VW198 **job lists**
VW199 **membership lists**
VW200 **passenger lists**
VW201 **ships' passenger lists**
VW202 **price lists**
VW203 **tariff schedules**
VW204 **reading lists**
VW205 **voters' lists**
VW206 **wine lists**

VW259 *<document genres for literary works>*
VW260 **allegories**
VW261 **bestiaries**
VW262 **biographies**
VW263 **autobiographies**
VW264 **collective biographies**
VW265 **hagiographies**
VW266 **comedies**
VW267 **commentaries**
VW268 **dialogues**
VW269 **epigrams**
VW270 **essays**
VW271 **fables**
VW272 **fairy tales**
VW273 **folk tales**
VW274 **legends**
VW275 **histories**
VW276 **annals**
VW277 **case histories**
VW278 **chronicles**
VW279 **genealogies**
VW280 **genealogical tables**
VW281 **pedigrees**
VW282 **memoirs**
VW283 **monographs**
VW284 **myths**
VW285 **narratives**
VW286 **novellas**
VW287 **novels**
VW288 **nursery rhymes**
VW289 **oral histories**
VW290 **parables**
VW291 **poems**
VW292 **elegies**
VW293 **prayers**
VW294 **litanies**
VW295 **proverbs**
VW296 **reminiscences**
VW297 **romances**
VW298 **short stories**
VW299 **tracts (documents)**
VW300 **tragedies**
VW301 **treatises**

Figure 8. **Additional examples of arrangements needing improvement**

mechanicals

VW.1187
HN March 1993 descriptor added
* ALT mechanical
SN Copy prepared for photographing to make a printing plate, consisting of such elements as text, titles, and artwork that have been arranged, pasted, and marked.
UF paste-ups

copper engraving

KT.673 (L,R)
HN March 1991 descriptor added
SN Process of engraving for printing using copper plates; replaced in the early 19th century by the use of more durable plates, either of steel or of steel-faced copper
UF chalcography
copperplate engraving
* engraving, copper
* engraving, copperplate

barrel vaults

PJ.1875 (B)
* HN March 1993 descriptor moved
* May 1991 scope note changed
* May 1991 lead-in term added
* May 1991 lead-in term deleted, was
* transverse barrel vaults
* May 1991 lead-in term deleted, was
* vaults, transverse barrel
* ALT barrel vault
SN Vaults of plain, semicircular cross section supported by parallel walls or arcades. (DAC)
UF cradle vaults
tunnel vaults
* vaults, barrel
* vaults, cradle
* vaults, tunnel
* vaults, wagon
* vaults, wagonhead
wagon vaults
wagonhead vaults

bluish gray

DL.258
UF aqua gray
baby blue
* black, blue
* blue, baby
* blue, black
blue black
blue gray
* blue, powder
centroid color 191
* gray, aqua
* gray, blue
* gray, bluish
* gray, light Payne's
light Payne's gray
* Payne's gray, light
pewter (color)
powder blue
slate (color)

* Line of little value to the thesaurus user

Figure 9. **Sample entries from alphabetical display**