

Use of a Relational Database System to Model the Variability of Historical Source Information

Joseph A. Busch, The Getty Art History Information program, Santa Monica, California, U.S.A.

Published in: *Cognitive Paradigms in Knowledge Organization: Second International ISKO Conference*. Madras, 26-28 August 1992. Organised by Madras Library Association, Sarada Ranganathan Endowment for Library Science, University of Madras. First published August 1992.

The Getty Art History Information Program (AHIP) has collaborated with three institutes to develop an information system to contain information from their archives and to use it for historical research. This paper suggests ways to modify the conventional information retrieval (IR) model to accommodate an ambiguous IR response from historical resources. It reviews recent research on the cognitive process of inquiry and methods used by historians to organize information. A retrospective systems analysis is used to describe and generalize the Getty system data model. Examples of discoveries made using the Getty systems are briefly described.

1. Introduction

This paper is a systems analysis written from a retrospective point of view. Although its aim is to rationalize and generalize an actual system development project, rather than to faithfully report the designers' intentions as they developed the system, it is also informed not only by the record of the system's development but also research into the cognitive process of inquiry and methods used by historians to organize information.

2. Differences between Historical and Factual Information Resources

"More than one 'true interpretation' is indeed, very frequent in historical source material."¹

Conventional information retrieval (IR) models are based on the premise that there is an unambiguous answer to a question. Consider a simple example: what is the population of Los Angeles? An alphabetical search in the gazetteer in the *American Heritage Dictionary*² under "Los Angeles" finds that there are two Los Angeles - one a city in south-central Chile southeast of Concepcion with a population of 49,175, and one a city in southern California on the Pacific Ocean with a population of 2,966,763. If the U.S. city States was the "right" answer to the question, the dictionary (a factual database) would have supplied an unambiguous answer to the question. If this gazetteer had been computerized, it might have presented a list of multiple answers to choose from, perhaps access to a map, and perhaps a variety of ways in which the query could have been posed; for example, using string truncation and wild card characters - but the assumption informing the systems design would have been that there was a unique, unambiguous answer to the question, which could be formulated by typing in a string of alphabetical characters.

By contrast, an historical IR model is based on the premise that there are multiple and potentially ambiguous answers to a question that depend on historical dimensions such as space and time, as well as points of view. Los Angeles, California is a place that has existed over time. Its political boundaries have changed since it was founded. In an historical dictionary, Los Angeles would be variously identified as a part of Spain, Mexico, or the United States of America. It was not on, but near, the Pacific until the 1920s, when several coastal regions were incorporated into the city proper. Population information would be represented by a series of counts derived from historical documents and censuses. A government demographer would report the population according to the

latest U.S. Bureau of Census data, while a community activist would report additional numbers for the uncounted homeless people and undocumented aliens. In an historical IR model, all of these population counts would be correct answers to the question: "What is the population of Los Angeles?"

The scientist, technologist, businessman, bureaucrat, or student may wish to obtain a quick, unambiguous, and "correct" answer to a question. Many information resources such as almanacs, dictionaries, and their computerized counterparts have been designed to do just that. However, developing information resources for the historian requires a different sort of response reflecting a broader mode of inquiry. It is closer to the breadth of an entire library that contains a variety of types of information (primary, secondary, and tertiary) dispersed in many volumes, boxes, and shelves, and perhaps located in many different places throughout the world. The notion of historical research implies a mode of inquiry different from that used in the experimental sciences. It is difficult to predict what questions will be asked and what responses may be elicited. Not much can be said with certainty except that we live in the present and that there exist artifacts of the past. The historian's laboratories are libraries, archives, and museums, as well as the people, places, and objects found throughout the world.

This is a modern notion of history, where there is no absolute or correct reading of the past, but only a subjective narrative informed by research into historical sources that are interpreted from the present point of view.³ Simon Schama's recent book *Dead Certainties* provides two historical narratives, within which, he reflects in the Afterword, "in both cases, alternative accounts compete for credibility."⁴ What makes Schama's book modern is the self-consciousness about the variability of historical truth. Appropriately, parts of the book read like an historical novel, and others like a good mystery, serving to inform us of the narrow distinction between historical narration and fiction. Schama understands historical narrative as the telling of stories, not objective truths.

Today, Thucydides and Herodotus might more correctly be considered chroniclers, from the Greek *khronika* (annals, or a chronological record of events) rather than historians. As Schama implies, the modern notion of history concerns itself particularly with historiography (the writing and reading of history), the result of historical research, and its further interpretation and use over time. However, the original Greek meaning of history (*historia*) was an inquiry.

3. Organization of Information by Historians

"History (historiography) is an inter-textual, linguistic construct."⁵

Tibbo⁶ notes in a recent review article that a "realistic view of scholarship and information use" in the humanities is beginning to emerge (p. 295). Recent studies of the process of inquiry and methods used by historians to organize and retrieve information show the importance and use of the following:

- Primary source materials in various formats and in large amounts,
- Proper names to organize and search for information generally, but
- Various heuristic methods to organize materials to be used in a specific project, such as chronologically or by topic, and
- Spatial metaphors to indicate the relationships between pieces of information.

Donald Case,⁷ reporting on a study of how historians organize their research materials in their offices, starts with the notion that physical arrangements of both documents and office is of

particular importance since historians are obviously text-based researchers. Case concludes that spatial metaphors in interface design for computer systems would be helpful. Cards and computerized lists were developed “to capture and sequence ideas and references to be used in writing a specific document” (p. 662); for example, to create detailed chronologies of what subjects had done during their lives. They also developed card files to the books and/or articles they had collected and read in support of their scholarship (p. 663). Most chose to organize their files and notes by topic, or by a combination of topic and chronology (p. 663). But “historians claimed to rely on their own memories for where a theme or particular passage can be found” (p. 664).

Schmitt's interviews with art historians⁸ reveal that the important source materials for art historians are as follows:

- Visual materials such as original objects, reproductions, institutional collections of reproductions such as photographic archives, and personal collections of reproductions which are used for research and teaching,
- Primary documents such as original documents in archives or dispersed, or reproductions, and
- Secondary sources such as books and articles in specialized subject libraries on university campuses, which are found using catalogs and indexes via printed or online access.

The importance of documentation and cataloging information as a “creative stage in the process of intellectual inquiry” is noted (p. 44). All interviewees kept files in a variety of media such as notebooks, file cards, data sheets, etc. The “relationship of pieces of information plays a crucial role in conceptualization, even, at times, emulating spatial relationships” (p. 49). The most desired research enhancement is the creation of detailed scholarly catalogs with cross-indexing in various ways besides by artist; such as by iconography, time, region, owner, etc. for information in museums, archives, libraries, and slide libraries (p. 53).

Siegfried and Wilde⁹ report on an experiment to review computer searching behavior by humanities scholars at the Getty Center for the History of Art and the Humanities. A common theme in all of the studies is the importance of primary source documentary material. “The participants did a good deal of searching for proper names, either as subjects or as authors. This would seem to confirm Stephen Wiberley’s¹⁰ contention that proper names form a larger part of the humanist’s search vocabulary than has been recognized” (p. 141). Another strategy noted was that some searchers “panned for gold” from a printout of a large number of brief format records from which “they would select specific records to print (in) full” (p. 139).

Wiberley and Jones,¹¹ reporting on a general study of how humanists seek information, note several distinct approaches, which include:

- Geographic approaches in which “fellows who were studying the history or people of a locality usually went to that place to find evidence”¹², and
- Genealogical approaches in which “much of the information seeking entailed tracking documents about individuals” (p.643).

“We were impressed by how many fellows told us they did not talk to librarians who worked in general reference departments. In contrast, almost all fellows who used special collections, particularly of archives and manuscripts, reported that they depended heavily on the staff of repositories” (p. 641).

Bates¹³ suggests that “area scanning,” i.e., by broad categories such as the way books are arranged in a library or documents in an archive, meets some real needs, although more research is needed to understand why this approach is popular. This method often leads to serendipitous discoveries because the researcher can flip through pages of full-text materials to get “a quick gestalt” (p. 417). To reproduce area scanning in a database, it “will need to contain very large bodies of full text, as well as different types of text (narrative, statistical, bibliographic references, etc.)” (p. 419). Although Bates’ study is not specific to the humanities, it does suggest a model of information seeking behavior that appears congruent with those reported by studies that limited their scope to these disciplines.

Thaller¹⁴ reports on the historical workstation project Max-Planck-Institut für Geschichte in Göttingen. He describes the requirements of the system to hold and analyze both quantitative and textual information. The general requirements are for a data structure that can accommodate data of variable length, a large number of attributes, and repeatable fields. The data may consist of full text in a small number of lengthy fields, structured data in many fields with very short texts, as well as data representing “temporal and numerical intervals” (p. 152). This project chose not to use a relational database model, but rather to develop a hypertext tool that permits “book-style” databases to be built. These databases can also be related to resources, such as currency tables, and have analytical and versioning tools available to support historical analysis and research.¹⁵

Some other recently developed computerized systems for historical source information include the Electronic Peirce Consortium,¹⁶ which uses a hypertext tool to build a “book-style” database, and the Medieval and Early Modern Data Bank,¹⁷ which uses flat files, and the Kellogg Archive a Syracuse University Plexus system,¹⁸ which uses a structured relational database system model.

4. Goals of the Getty System Development Project

When the J. Paul Getty Trust, a not-for-profit foundation, was established in 1981, it decided to explore ways in which information technology could be applied to the problems of art historical research. Although many of the goals for the program were unclear, there was a particular interest in quickly creating resources that could be directly used by art historians. To accomplish this goal, several well-established research projects were funded to computerize their existing scholarly catalogs and cataloging operations. This paper will discuss two of these projects, the Witt Library Collection at the Courtauld Institute and the Census of Antique Art and Architecture Known to the Renaissance (the Census) at the Warburg Institute and Bibliotheca Hertziana.

A common information system was developed for the Witt Library and the Census. The goal of this information system immediately diverged from that which initially motivated the Getty Trust. This goal could be stated as to provide an improved method for accessing and navigating among the materials contained in the collections of the Witt Library and the Census, which have both visual and textual components.

The system needed to provide methods for Witt Library and Census staff to enter, edit, and control the consistency and quality of their information. In this sense, the “users” of the system were to be researchers who worked as information producers. The information had to be organized to conform to the pattern, style, and tradition of the source information contained in the Witt Library and the Census. At the same time these patterns had to be flexible enough to hold source information developed over the long histories of the respective projects and in their various subject areas.

The system also needed to provide a mode of access for researchers to search for and only view information without being permitted to modify it. In this sense, the “users” of the system were to be researchers as information consumers. In this mode the researcher needed to be able to combine information in ways that the Witt Library and the Census could not have anticipated when they filled the databases but that did not change the information in the database. A method was also needed for the Witt and the Census to periodically generate new editions of the information system, as was a method to replicate the system so that it could be distributed to additional sites.

5. Background on the Witt and Census Projects

Witt Computer Index (the Witt)¹⁹

The Witt Library Collection of the Courtauld Institute of Art in London contains more than 1.5 million photographic “mounts” covering Western painting from approximately 1200 to the present and assembled over the last eighty years. The collection is organized by “School” based on the nationality of the artists, then alphabetically by artist's name within school.

The Witt Library photographic “mounts” contain reproduction; printed text “cut and pasted” from published materials, such as museum, auction, and exhibition catalogs; and typed or handwritten annotations transcribed from published material or composed by the Witt Library staff. The text information on the Witt “mounts” is what is called “catalogue raisonné” information. Catalogues raisonné identify a work of art by such information as artist, title, date provenance (that is, ownership and sales history), exhibition history, and scholarship (that is, definitive sources of information about the artist or work). The computerized database records contain information directly transcribed from the “mounts” (with some notable exceptions described below). No effort was made to verify contradictory information that appears on the mounts.

The Witt Computer Index database currently contains information about 57,000 works of art represented by approximately 67,000 photographic “mounts” for all artists in the “American School” in the Witt Library Collection; information about 12,000 18th century works in the “British School;” and more than 160,000 associated authority records and 6,500 associated controlled vocabulary terms.²⁰

Census of Antique Art and Architecture Known to the Renaissance

Since 1949, the Warburg Institute in London has collaborated with a variety of scholars and institutes to develop a “central repository of scholarly findings about the relationships between the Renaissance and Antiquity.”²¹ The goals of the Census have been to identify and acquire (by purchase or photography) Renaissance sketchbooks after the Antique, drawings or copy studies made by other artists, and copies of existing photographs of ancient sculpture; implement photographic campaigns of ancient sculpture; and organize these source materials iconographically into documentary files “so that classical statuary and reliefs as well as their copies in artists’ drawings and engravings can be seen in conjunction with medieval and Renaissance representations of the same subject.” (*Annual Report, 1954-1955*).²²

A 1986 inventory of the Census included a thematic catalog, a normal and an annotated index of artists, and an annotated illustrated index of Renaissance collections.²³ This inventory, an original scholarly work and not based on the computerization of the collection, reflected the unsystematic development of the collection over approximately 35 years.

The actual Census database is based on the information contained in the Warburg Institute's card catalog, which lists "all figured monuments, statues, sarcophagi, and bronze sculpture of Classical Antiquity that were known between 1400 and 1527, along with pertinent sources of texts and illustrations."²⁴ The database also includes Renaissance drawings and plans after the Antique, printed guidebooks of Rome, and facsimile manuscripts collected in the Bibliotheca Hertziana in Rome. The Census database currently contains approximately 43,000 computer records as well as 25,000 images stored on videodisk.

6. Characteristics of the Getty System Data Model

The initial Getty information system was developed by a third party, Online Computer Systems, using the standard systems development methodology of analyzing of the user's requirements, then translating the user's requirements into systems terms, system design, system development, system testing, etc. However in the early 1980s when the Getty information system was designed, "the whole field of systems analysis as a formal methodology, and specifically the database design using entity-relationship modeling and related techniques,"²⁵ were not widely in use.

6.1 Systems Analysis

In a recent interview, Catherine Gordon, the head of the Witt project, remembered the day she first met Rick Holt from Online Computer Systems at the Witt Index offices when they were located in Portman Square in London. She recalled that he had a large black briefcase with him. When they sat down around the table she asked him, "Well, what do you have?" He answered, "Well, what do you want?"²⁶ This interchange characterized the opportunity which this system development project presented to build an information system "from scratch".

Rick Holt proceeded to base the model of the information system on an investigation and understanding of the cognitive patterns embodied in the information and its organization in the Witt Library Collection and Census documentary files. In the case of the Census, the system design was also based on an analysis of the card catalog at the Warburg Institute, supplemented by extended interviews with staff members working in each project.²⁷ This approach assumed that, given these two patterns of organizing information, a generalization from them might be valid more widely across the domain, and would also make it easier for outsiders to make more general use of the systems for research.²⁸

Data Characteristics

A primary characteristic of the Witt and the Census information was that all of it was textual except for dates and images. The other key data characteristics were as follows:

- Extensive use of formal naming,
- Multiple sources of evidence, some of which contradict each other, and
- Indication of the relationships between materials.

Naming

The Witt and Census source materials made extensive use of proper names. These include the names of:

- Objects such as works of art; monuments and documents,
- People such as artists, engravers, authors, wives, husbands, lovers, children and students,
- Institutions such as owners, exhibition organizers, professional associations, and dealers,

- Places such as countries, states, cities, and buildings, and
- Events such as sales, exhibitions, and preservation actions.

These names were often repeated many times throughout the source materials, although frequently in many variant forms because of long development histories.

The Witt and Census source materials also made extensive use of dating, although dates were often named rather than stated explicitly, for example: “mid-seventeenth century” or “Flavian”. This convention of naming dates implied a range of dates rather than a specific one. In computerizing the Witt and the Census, a method was needed to search by dates as names, but also to define such names by starting and ending dates so that, for example, a date named “mid-nineteenth century” might be defined as between 1836 and 1862. On the other hand, when a scholar searched for an item between two dates, it might be important to also be able to find items with date ranges that were partially within the specified dates. For example, it might be important for a search for “mid-nineteenth century” to also retrieve items with the dates named “nineteenth century” and “romantic period”, etc. This concept of named date ranges is illustrated in Table 1.

The Witt and Census also used a variety of descriptive vocabularies describe, for example:

- Type of material, such as “oil on canvas” or “marble”,
- Visual medium, such as “drawing: pen” or “wash”,
- Type of institution, such as “town hall”,
- Role of an individual, such as “father”, and
- Type of preservation action, such as “damaged” or “restored”.

Some of these were small and not extensible; others were routinely extended as new descriptive terminology was needed.

A special case of descriptive vocabularies was descriptive details, or iconographical analysis. In art history, the examination and interpretation of visual information is extremely important. The methodology of iconographical analysis specifies three levels at which pictures can be interpreted:²⁹

- The primary level of analysis is the description of the “natural” subject matter, which answers the question “What is it?” This may include the simple naming of more or less important objects in the primary sources, such as “female” and “cauldron”.
- The secondary level of analysis is the description of the motifs identifying themes and concepts, which answers the question “What is it about?” For example, “Saint Cecilia martyred in a cauldron of boiling oil”.
- The third level of analysis is about interpretation, or the implied meaning of the object.

For these many types of names in the Witt and Census, consistent access to the same name within the information system was obviously very important. Thus it was important to avoid typing in the same name each time it was needed when cataloging or searching the database.

Historical Evidence

The Witt and Census source materials are concerned with the collecting of evidence or documentary materials relating to the works of art. Each piece of evidence is an historical event in the “life” of a work of art. The evidence considered together represents its “history”. Stam proposes a “system for classifying evidence according to its historical and intellectual function.”³⁰ The

typology in Table 2 is based on Stam's model of art as communication. This typology is particularly interesting because the kinds of information compare closely to those in the Getty system model. It also illustrates that there may be several pieces of historical evidence that document a particular historical event, and that there may be many historical events associated with a particular work of art as illustrated in Figure 1. One further aspect of historical evidence is that much of it is fragmentary or contradictory, and virtually all of it is subject to change³¹ or re-interpretation. In many cases, the historical evidence may be ambiguous and thus open to many potential interpretations. In her most recent paper, Dr. Gordon gives a delightful example in which the identification of the artist, title, subject, size, as well as the sitters vary among four pieces of historical evidence collected on Witt mounts for the same painting.

The same concept of historical events and historical evidence to describe them can be applied to names. Like objects, people, institutions, locations, and events may also have many historical events associated with them, as well as several pieces of historical evidence documenting those particular historical events.

Relationships

Figure 2 illustrates the relationships in the Witt and Census source materials. Whole-part relationships were implied by the way in which original source materials were being processed by the Witt and Census staff as well as by the scholars who were using them: for example, by the Witt's practice of tearing up exhibition and sales catalogs to paste them onto "mounts", or a scholar's reconstruction of a sketchbook whose drawings had been dispersed. Informed by an interest in the emerging field of artificial intelligence, Holt must have recognized that there were certain canonical patterns implicitly used by the projects for expressing the relationships between information about the works of art.³² These were:

- Object to Evidence. One-to-many relationships between an object and its historical evidence as discussed above.
- Derivative Object. Relationships from one object to one or more other objects to indicate that one was derived from another: for example, to reference "copies" or "engravings" to the source work of which it is a copy or engraving,
- Related Object. Relationships from one object to one or more other objects to indicate a general reference to, for example, "related works" in the collection.
- Whole-Part. Relationships from one object to one or more other objects to indicate that an object was part of another object(s).
- Part-Whole. Relationships from one object to one or more other objects to indicate the parts of an object.

The first three of these types of relationships are non-recursive, that is, only the explicit relationships are meaningful. For example, if A is related to B and B is related to C, it is not necessarily true that A is related to C. However, the whole-part and part-whole relationships are recursive into hierarchical structures. It is also possible that an object may be associated hierarchically to several different parents in a polyhierarchical structure. For example, a statue that was once a part of a Roman temple may have later been moved to a church, or the panels of an altarpiece may have been dispersed and later become associated with a different set of panels. Such mutable relationships are another consequence of the fragmentary and ambiguous evidence that exists, particularly for older object such as Antiquities.

As with historical evidence, people, institutions, locations, and events may also have relationships between them. For example, the affiliations of artists with institutions such as professional associations, galleries, and museums and the dates of those affiliations, as well as their relationships with other individuals such as teachers and family. Objects, historical events, and evidence may also be associated with names.

Decomposition of Source Materials

The goal of the Witt and Census information system was not simply to access but also to navigate among the source materials. The problem was how to record the implicit relationships hidden within the source materials so that they could be accessed and used to navigate among them. The materials were also organized either physically together in files and, in the case of the Census, also cross-indexed intrinsically through the existing card catalog and extrinsically through the publication of scholars' work.³³ But it was decided that this system could not simply be an index to the source materials in the Witt and Census but would include the physical content of the sources as well.

An analysis of the information in the source materials in the collections showed that, even though they came from a variety of sources, they were relatively well-structured in a manner more or less consistent with the catalogue raisonné and other bibliographic models. Understanding the characteristics of the source information discussed above made it possible to decompose each type of source information into a group of uniquely occurring or repeating fields of information or data. Data entry would be a matter of deconstructing the text as it appeared in the source materials, and typing it into the appropriate data field.³⁴

Source information for the various types of names that would occur in data fields were also decomposed into groups of fields according to the type of name. Once a name record was constructed, the unique name and its associated information would be stored only once in the database and could simply be referenced each time they were needed.

Descriptive vocabularies were more simply compiled as finite or extensible vocabulary lists according to the type of vocabulary, which could be referenced each time a term was needed.

Finally, on the basis of the understanding of the relationships between the types of source information described above, the structure to reference or link between groups of fields was specified.

Implementation of Systems

The information system embodying this information model was implemented in 1983. Two versions of the system were created—one for the Witt and one for the Census—but they are essentially the same. While minor enhancements to the initial system design have been made since then, the Getty system has maintained the original character of its data structure.

During the past two years, the system has been ported from its original minicomputer-based hardware platform to run on 386 microcomputers by systems engineers from Digitus, Ltd. A read only version of this system with simplified query-by-form screens was completed by Digitus in 1991. Initial testing and evaluation of the read only system is in process. The new system has been replicated at the Witt, the Census, and Getty offices.

The Witt and Census research staff have been filling their databases with source information since 1983. While much information has been transcribed directly from source materials without interpretation, considerable research has been done in the process of constructing extensive authority files for names, institutions, locations, and dates. As noted above, the authority files also make it possible to specify certain relationships between them. Such information can provide insights into the provenance of objects through the history of their ownership, as well as the relationships between creators and their social milieu.

Although the level of effort required to build these authorities has been considerable, over time, a critical mass has been entered into the databases so that the time saved by not needing to research and re-type names, institutions, locations, and dates is beginning to show dramatic productivity improvements.

As the data structure is filled with the Witt and the Census source information, researchers using the databases have discovered unpredictable relationships between various data items.

7. Discoveries using the Witt and Census Systems

The major advance of the Getty system is that, once one form of question has been posed, information responding to a range of other questions is immediately available without the need to formally pose these additional questions. For example, asking the question, "Where was this painting exhibited?" the user can find all other objects in the database that were included in the exhibition. In this way, it is possible to reconstruct an exhibition for which the exhibition catalog no longer exists (or ever existed). While the Witt Library has assiduously cut up the catalogs and reorganized their contents by artist, the database allows users to reconstruct them. As mentioned above, an interesting aspect of this information system is that relationships can be specified between both authority and non-authority files; in browsing the database, users can move to any linked data.

Collecting dispersed information sources in one electronic resource has already led to some interesting scholarly investigations and discoveries. Some preliminary examples are as follows:

- The identification of an unknown sitter in a famous Benjamin West oil sketch through the discovery that a very distinctive piece of jewelry appears in this sketch as well as one in which the sitter is known. The identification of the jewelry, a diamond brooch, was entered as part of the iconographic description of both works. The connection was discovered by searching on the ICONCLASS code describing the piece of jewelry.³⁵
- The study of Raphael's archaeological method (he is of course much better known as a painter) has suggested that the artist has applied various architectural drawing techniques much more deliberately than previously thought to systematically survey. Antiquities, rather than merely to make studies of Antiquities for use in his paintings.³⁶
- Very little is known about the history of restoration before the 16th century. The study of the restoration of ancient sculpture has suggested patterns across dispersed monuments.³⁷

These connections, which could not be made in the original physical archives without many years of individual scholarship researching the source materials, are indicative of the sorts of questions which historians typically pursue. The Witt and Census information systems should be useful to architects, archaeologists, museum curators, art dealers, and historians of taste, scholarship, and culture in the broadest sense. The Getty system seems to address the methods of scholarship

described in recent studies, but this conclusion is preliminary until further evaluations can be made as the retrieval system comes into general use.

Table 1-Concept of named date ranges

1750	1800	1850	1900	<u>Name</u>
		1836-1862		mid-nineteenth
	1800-----		1900	century nineteenth
	1779-----	1849		century romantic period

Table 2-Typology for classifying evidence according to its historical and intellectual function. (Based on Stam)

<u>Historical Events</u>	<u>Historical Evidence</u>
artist's life	archives, correspondence, diaries, legal documents, biography
creation of the work	object, artist's drawings, diaries, correspondence, contracts
physical changes in the work over time	drawings, photographs, conservation records, scientific studies
society's reception in inventories of the work	guide books, sales records
individual interpretation	criticism, essays, monographs

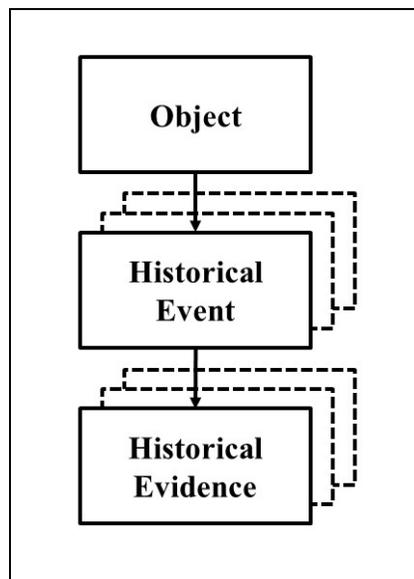


Figure 1-Diagram illustrating that one or more events may be associated with an object which is documented by one or more items of historical evidence.

References and Notes

- ¹ Manfred Thaller, "The Historical Workstation Project," 25 (*Computers in the Humanities*) 1991, p. 154.
- ² *The American Heritage Dictionary*, second college edition, Boston, Houghton Mifflin Co., 1985.
- ³ "The past and history float free of each other, they are ages and miles apart. For the same object of enquiry can be read differently by different discursive practices (landscape can be read/interpreted differently by geographers, sociologists, historians, artists, economists, etc.) whilst, internal to each, there are different interpretive readings over time and space; as far as history is concerned historiography shows this." Keith Jenkins, *Rethinking History*, London, Routledge, 1991, p. 5. Jenkins' brief book provides a clear discussion of the current thinking about history, and particularly the teaching of history, in a "modern" world. This paper assumes that the aim of historical study is research to discover evidence and construct an historically informed view, but not to discover or construct real "truth" or certainty.
- ⁴ Simon Schama, *Dead Certainties (Unwarranted Speculations)*, New York, Alfred A. Knopf, 1991, p. 322. This book considers two rather loosely related historical events: the death of General Wolfe during the Siege of Quebec City, and the sensational 19th century murder of George Parkman, a wealthy Bostonian, by a professor at Harvard Medical College who was indebted to him.
- ⁵ Jenkins, p. 7.
- ⁶ Helen R. Tibbo, "Information Systems and Services, and Technology for the Humanities," 26 (*Annual Review of Information Science and Technology*) 1991, pp. 287-346.
- ⁷ Donald Owen Case, "Conceptual Organization and Retrieval of Text by Historians: the Role of Memory and Metaphor," 42, 9 (*Journal of the American Society for Information Science*) 1991, pp. 657-668.
- ⁸ Marilyn Schmitt, general editor, *Object, Image, Inquiry: the Art Historian at Work*, Santa Monica, Calif., Getty Art History Information Program, 1988.
- ⁹ Susan L. Siegfried and Deborah N. Wilde, "Scholars go online," (*Art Documentation*) Fall 1990, pp. 139-141.
- ¹⁰ Stephen E. Wiberley, Jr. "Names in space and time: the indexing vocabulary of the humanities," 58 (*Library Quarterly*) January 1988, pp. 1-28.
- ¹¹ Stephen E. Wiberley, Jr. and William G. Jones, "Patterns of Information Seeking in the Humanities," 50 (*College and Research Libraries*) November 1989, pp. 640-641.
- ¹² "Usually the searching they did beforehand consisted of looking at a map or a telephone book to obtain repositories' addresses; if available, a published guide to the collection would be consulted." Wiberley and Jones, 1989, p. 643.
- ¹³ Marcia J. Bates, "The Design of Browsing and Berrypicking Techniques for the Online Search Interface," 13, 5 (*Online Review*) 1989, pp. 407-424.
- ¹⁴ Manfred Thaller, "The Historical Workstation Project," 25 (*Computers in the Humanities*) 1991, pp. 149-162.
- ¹⁵ Thaller, pp. 155-159 describes the software model of the Max Planck "historical workstation."
- ¹⁶ "The Electronic Pierce Consortium: a Network of Scholars and Technologies" was described in a session at the ASIS (American Society for Information Science) 54th Annual Meeting on October 31, 1991. The project aims to combine encoded electronic transcriptions of C.S. Pierce manuscripts with bit-mapped images of the pages, a bibliographic database, and hypertextual tools for analysis.
- ¹⁷ A database of medieval numeric data sponsored by the Research Library Group Program in Research Information Management. See "The Medieval and Early Modern Data Bank," 12 (*The Research Libraries Group News*) January 1987, pp. 8-10.
- ¹⁸ Described in a presentation at the Museum Computer Network meeting in Chicago in 1989.
- ¹⁹ Some portions of the discussion of the Witt Computer Index were first developed as part of a presentation on "Descriptors for Describing Pictures" given at the American Society for Information Science Annual Meeting technical session on "Image Classification Research: New Strategies and Techniques" on October 20, 1989 given by Joseph A. Busch and Cathy Whitehead.

-
- ²⁰ The Witt Computer Index artist authority includes all the British, Canadian, Australian, and New Zealand artists whose works are represented in the Witt Library (approximately 18,000 artists). Catherine Gordon, "Dealing with Variable Truth: the Witt Computer Index," 2, 1 (*Computers and the History of Art*) 1991, p. 27. The Witt has recently produced a computer-generated "checklist" of British artists derived from the authority file structures of the Computer Index database. The "checklist" contains artists' names, dates, and locations of birth and death, professional associations (including dates), notes on the extent of material in the Witt Library Collection, and variant names. *Checklist of British Artists in the Witt Library*, London, Witt Library, Courtauld Institute of Art, 1991.
- ²¹ Phyllis Pray Bober, "The Census of Antiquities known to the Renaissance: Retrospective and Prospective," in: *Roma, centro ideale della cultura dell' Antico nei secoli XV e XVI Da Martino V al Sacco di Roma, 1417-1527*, Milano, Electa, 1989, p. 372.
- ²² Bober, 1989, p. 373.
- ²³ Phyllis Pray Bober and Ruth Rubinstein, *Renaissance Artists and Antique Sculpture: a Handbook of Sources*, New York, Oxford, 1986.
- ²⁴ Arnold Nesselrath, "Current Status of the Census of Antique Works of Art and Architecture known to the Renaissance" (unpublished), 1990.
- ²⁵ Carol McMichael Reese and Marilyn Schmitt (transcript of) "Interview with Rick K. Holt, Online Computer Systems, Inc.," Washington, D.C., 1988, p. 15.
- ²⁶ Joseph A. Busch, "[Conversation with Catherine Gordon, Witt Computer Index," Washington, D.C., 1991].
- ²⁷ The design was also informed by Holt's active participation in the planning and analysis for a number of other Getty projects, including the development of an editorial system for the Art and Architecture Thesaurus (AAT), and a data entry system for the International Repertory of the Literature of Art (RILA).
- ²⁸ Although, as discussed in Wiberley and Schmitt, it may be acceptable that the research be mediated by an expert as is the case in most special collections such as archives. The most important criteria for usefulness by outsiders may be the ability to ask useful research questions and to be able to provide useful results. Thus the choice to focus the design on the database producers may have been a fully valid methodology.
- ²⁹ See the essay "Iconography and Iconology: an Introduction to the Study of Renaissance Art" in Erwin Panofsky, *Meaning and the Visual Arts*, London, Penguin, 1970. This essay, originally published in 1939, is the basis for modern iconographical analysis.
- ³⁰ Deirdre C. Stam, "What about the Mona Lisa? Making Bibliographic Databases More Useful to Art Historians by Classifying Documents According to the Aspect of Art Object(s) Under Consideration," (*Art Documentation*) Fall 1991, p. 129. Stam's typology is based on the assumption that an art object is essentially a kind of communication; as Stam argues, the Shannon Weaver Communication model could be analogously applied to it. See also Stam's earlier work on a communication model of art history in her dissertation; "The Information-seeking Practices of Art Historians in Museums and Colleges in the United States", 1982-83 [New York], Columbia University, 1984.
- ³¹ Gordon 1991, p. 22.
- ³² Reese, p. 21.
- ³³ For example, Bober and Rubinstein, 1986 as cited above.
- ³⁴ Except in the case where additional fields were added to hold the full-text transcription of primary source information, such as eyewitness accounts, original documents, or information inscribed on the objects and artifacts themselves.
- ³⁵ This discovery was made by Catherine Gordon, but it has not yet been published.
- ³⁶ Arnold Nesselrath, "Raphael's archaeological method," in: *Raffaello a Roma, il convegno de!* 1983, Roma, Edizioni dell' Élefante, 1986.
- ³⁷ Arnold Nesselrath, "The Venus Belvedere: an Episode in Restoration," 50 (*Warburg Journal*), 1987, pp. 205-214.