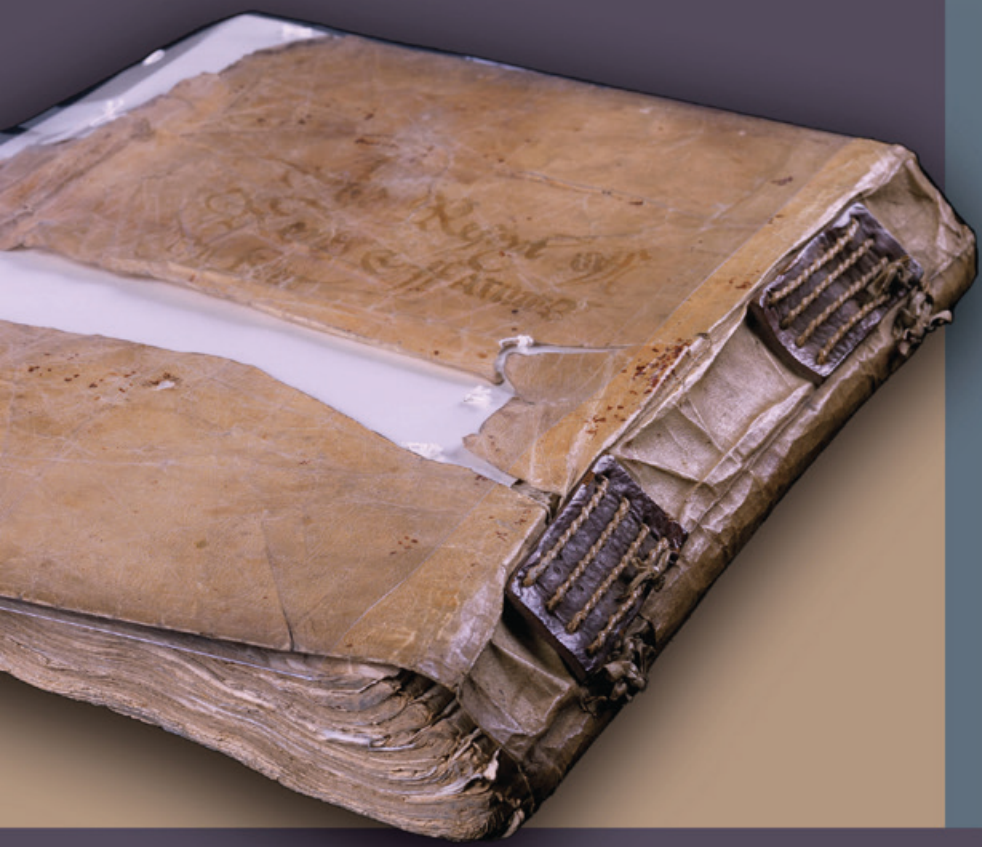

Collection Development, Cultural Heritage, and Digital Humanities

BOOK CONSERVATION AND DIGITIZATION

THE CHALLENGES OF DIALOGUE AND COLLABORATION

by

ALBERTO CAMPAGNOLO

ARC HUMANITIES PRESS

BOOK CONSERVATION AND DIGITIZATION

ARC HUMANITIES PRESS

COLLECTION DEVELOPMENT, CULTURAL HERITAGE, AND DIGITAL HUMANITIES

This exciting series publishes both monographs and edited thematic collections in the broad areas of cultural heritage, digital humanities, collecting and collections, public history and allied areas of applied humanities. The aim is to illustrate the impact of humanities research and in particular reflect the exciting new networks developing between researchers and the cultural sector, including archives, libraries and museums, media and the arts, cultural memory and heritage institutions, festivals and tourism, and public history.

BOOK CONSERVATION AND DIGITIZATION

THE CHALLENGES OF DIALOGUE AND COLLABORATION

by

ALBERTO CAMPAGNOLO AND CONTRIBUTORS

ARC HUMANITIES PRESS

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library.

ISBN (print): 9781641890533
eISBN (PDF): 9781641890540

www.arc-humanities.org
Printed and bound in the UK (by Lightning Source), USA (by Bookmasters), and elsewhere using print-on-demand technology.

CONTENTS

ILLUSTRATIONS

Figures

Lists

Tables

Chapter 9

THE DEVELOPMENT OF THE LANGUAGE OF BINDINGS THESAURUS

ATHANASIOS VELIOS and NICHOLAS PICKWOAD*

BOOKBINDINGS HAVE LONG been the Cinderella of the bibliographical world, mostly ignored unless extensively decorated, and the reason most often given for this by cataloguers and bibliographers has been the absence of any consistent and recognized terminology with which to describe them, especially those bindings which have little or no decoration. There are many reasons why no such terminology had been created, but a lack of serious research, the confusion inherent in inherited and inconsistent terminologies, and a general lack of the expertise required to recognize different structures and materials were chief among them. This has not been helped by the antiquarian book trade, which has over the past century and a half developed its own highly idiosyncratic and inconsistent, if not actually inaccurate, terminologies. Traditional bookbinding terms in English, as they have come down to us, refer mostly to nineteenth-century binding practice, as the first bookbinding manual in English dates only from 1811, and the terms used are therefore not necessarily helpful in describing earlier bookbinding practices. The emergence after the disastrous floods in Florence in 1966 of the distinct discipline now known as book conservation made the creation of such comprehensive and consistent terminology essential, as recording the distinctive features of bookbindings and their condition was a necessary part of book conservation. A small number of book conservators went on to do further research into historical book structures, extending and refining the newly created terminology and giving precise meanings to traditional terms that had often been used very loosely up to that date. Unfortunately, the new terms coined in this process by different researchers were not themselves always consistent, with the inevitable risk of creating further confusion rather than reducing it. As, however, more extensive use was made of databases to record such details, the need for consistency in the form of a standardized thesaurus became ever more pressing.

The digitization of the data from the survey of the bound manuscripts and the early printed books in the library of the monastery of Saint Catherine on Mount Sinai provided the genesis of the Language of Bindings (LoB) thesaurus, as the database required an organized terminology.[1] The survey was already arranged according to the strict book-structural principles that both Nicholas Pickwoad and *Kneep en binding* had used for book descriptions from the early 1990s onwards,[2] recording the data in the

1 Ligatus Research Centre, *Language of Bindings Thesaurus*.

2 Gnirrep, Gumbert, and Szirmai, *Kneep en binding*.

*Directors, Ligatus Research Centre, University of the Arts London (UK).

order in which the bookbinder made a binding, creating a logical sequence of top terms (endleaves, structures, spines, boards, endbands, covers, decoration, fastenings and furniture, enclosures), which then generated hierarchies of narrower terms as more and more detailed terms were included. It was this arrangement that was shared with experts from the Foundation of Research and Technology Hellas at a meeting in Crete in 2011 which in turn led to the decision to rearrange and publish the terms on the semantic web, using the simple knowledge organization system (SKOS) and following the CIDOC conceptual reference model (CRM).[3] To assist in this process, we brought together an international group of binding experts to discuss existing practices and to set limits on the level of detail that it was sensible to include in this first online thesaurus.

LoB Workshops

Given that one of the aims of the LoB was to provide value lists for documentation systems, we followed a bottom-up approach for its development, starting from concepts currently in use in bookbinding documentation and gradually grouping them together to identify broader categories. In order to make sure that the thesaurus has adequate coverage of a wide variety of material so that it can be used in practice, three two-day workshops were organized to initiate the development of the thesaurus. Thirty-five experts from many European countries contributed to the workshops, each one bringing their own experience both in books made in their countries and in bookbinding description.

The format of the workshops was inspired by the so-called *coding sprints* organized by open-source communities. Participants were divided into groups, given a task—typically a section of the binding to be described—and were requested to work for a limited amount of time of up to two hours. Workshop facilitators were recording the terms proposed from each group for the description, and two workshop organizers would keep an overview of the work in each team to ensure that work was not being duplicated. Following the end of each session, and while participants were reporting on their work, the workshop facilitators would log the terms in a digital thesaurus management system to be consulted by the participants during the next round.

This format strengthened the community of experts and set the foundations for the adoption of the thesaurus as best practice in the domain. It also allowed the population of the thesaurus with relevant concepts relatively quickly. However, it did prove to be a lot of work for the workshop facilitators, who would not have been able to undertake that work if they were not domain experts themselves with a good understanding of the technical requirements for the thesaurus. These technical requirements are described in the next section.

3 Miles and Bechhofer, "SKOS"; ISO, *ISO 21127:2014*.

Cultural Heritage Documentation

Free-Text and Structured Records in a Collection

In the field of book conservation, and cultural heritage in general, many of the documentation records have been compiled using free text. The documentation training of the conservator includes learning how to produce reports about the condition or treatment of objects. This emanates from a strong tradition in the profession around conservation reports which were written or typed as free text on paper and stored in filing cabinets. These were filed by object and are now easy to retrieve when the corresponding object needs to be examined or treated again. Many conservation studios still follow this practice, using paper records as their default documentation system or relying on free text in their digital documents. These arrangements work well when retrieving information about a specific object but are inefficient when retrieving information about a collection. This is primarily because of the large amount of time required to read and process free text, but also because of the obvious barriers of reading in foreign languages in an increasingly global community of professionals.

The strength of free text is its narrative capacity, which can communicate custom and complex information in detail for each object. However, its inherent limitation of time-consuming reading and decoding meant that other forms of documentation have been preferred when requiring access to information about many objects simultaneously. By standardizing the information to be communicated for each object, it is possible to retrieve results across a collection quickly and with little effort. Typically, we have a documentation form which prompts answers to a limited number of questions (fields) for each object. These questions can be defined in any language, and most importantly, in those languages used for computer encoding. In information science this set of questions is called a schema. The schema and the collected answers (also referred to as structured data) comprise a database. By knowing the definition of the schema, a researcher can direct questions to the right database field or combination of fields to retrieve answers efficiently. This is often done with a query form whose fields are described by a label or short text.

In order to retrieve results from a database, a researcher needs to input possible answers to the query fields, expecting to retrieve records matching that answer. Often, the problem is that the researcher does not know the values of the possible answers for each field, and thus submits queries which return no results. To produce consistent records and subsequently aid retrieval, the range of these values can be defined in advance. Such a pre-defined list is often referred to as a controlled vocabulary. By offering the controlled vocabulary to a) the database editors producing the records and b) the researchers querying the records, one can ensure consistency and that there are always results returned after a query.

CIDOC-CRM and Integration across Different Collections

Although structured data and controlled vocabularies improve access to the information within a database, further considerations are required for integration across different

collection databases. Enforcing standardization by producing a universal schema applicable to all collections is impossible. Such efforts often result in schemata which attempt to cover broad specifications but quickly become impractical and unsustainable due to their large scale. Moreover, most of the applications require a small fraction of the standard schema and therefore maintaining the full schema is difficult to justify. To overcome this problem, approaches such as that of the Text Encoding Initiative,[4] where schemas can be customized based on a set of guidelines, are viable, but require coordinated consensus from a wide community of experts. This is often difficult to achieve, making alternative solutions more practical.

Integrating different databases can also be done following a different method. When observing different schemata, it is often the case that most of the fields are variations of the same abstract concept. For example, the idea of a book changing owner may be evident in a number of fields in different databases, such as *sale date*, *purchase date*, *owner name*, etc. These variations are essential for the business of each party maintaining their database, but all relate to the same concept of change of ownership. Querying data from all these fields to discover ownership would be impractical. If all these variations were to be translated into the abstract concept of *changing ownership*, then it would be easier to query the combined data. The definition of these abstract concepts in the cultural heritage domain has led to the development of an abstract model about cultural heritage data: the CIDOC-CRM. The process of translation from a schema to the CIDOC-CRM is called *mapping*, and it is a well-established practice in the field of cultural heritage and within the CIDOC-CRM community.

An example of mapping might be as follows. During the description of an endband of a book, we make statements about the *endband core*. This is typically a thin length of material such as cord which can be separated from the book if the endband is damaged and may contribute some information about the provenance of the binding. In the CIDOC-CRM, we could match an endband core of a binding with the CRM entity *E22 Man-Made Object*, which is a class of things that have been produced on purpose as a result of human activity. All individual book components can be matched to *E22 Man-Made Object*, as can the book itself. By matching the endband core to *E22 Man-Made Object*, we can then consider the properties of the entity in relation to the information held on our database about the endband core. For example, the property *P45 consists of* would link the endband core of the specific book (*E22 Man-Made Object*) to the material *cord* (*E57 Material*). In this way, the two elements "endband core" and "cord" in the database are now formally declared as part of the CIDOC-CRM mapping. This declaration allows the integration of this data and further processing by other types of software.

Another important aspect of integrating data from different databases within a domain is the use of universally accepted controlled vocabularies. These are often published in the form of thesauri which are then adopted following good practice in the domain. They provide lists of universally agreed concepts about the domain which may

4 TEI, *TEI P5*.

then be matched to different *labels* in one or more languages. The important point here is the separation of the labels (language words) from the concepts to which these labels refer. If there is agreement on a concept that is being described, then agreement on the label of that concept is not essential—that is, different audiences may use different labels to refer to the same thing. For this to work there must be a unique reference point, which is also independent of language so that different labels can be matched to the correct concept. In the next section, we explain how this reference point can be provided.

Semantic Web and SKOS

One way of implementing database integration through the CIDOC-CRM is to use semantic web technologies. The CIDOC-CRM is a formal ontology, which means that it defines the abstract model of cultural heritage data through a set of *classes* (entities) and *properties* (relations) between classes. With some exceptions, it is possible to express CIDOC-CRM classes and properties using the W3C Resource Description Framework (RDF), an important part of the semantic web.[5] RDF allows the expression of any data on the web so that other users and applications can refer to it. The concept of integration and reuse of data are interlinked and form one of the most important principles of the semantic web. RDF is a generic framework which can encode data according to the CIDOC-CRM.

In a similar fashion, a way to encode thesauri for use on the semantic web is SKOS. SKOS provides the standard instructions for separating concepts from labels and providing definitions in multiple languages, and relationships between concepts which we will explore later on in the context of LoB. SKOS allows RDF software to process thesauri.

Categorical Description

Many of the observations recorded in cultural heritage databases and in resources related to the structure of books are *types* of characteristics. These observations involve assigning a type to the book component examined. These types typically correspond to categories of characteristics. For example, a component of a binding is characterized as endband core, when the type *endband cores* is assigned to it. The assignment of types to components is a specific property/relation linking the component being described with the abstract type. Whereas a binding component may be considered as an *E22 Man-Made Object* in terms of the mapping to the CIDOC-CRM, the category *endband cores* is an *E55 Type*. Their connecting property/relation is *P2 has type*. Categorical descriptions are so frequent in cultural heritage documentation that within the CIDOC-CRM any entity—not only *E22 Man-Made Object*—can be linked to *E55 Type*. The CIDOC-CRM models this relation at an abstract level and has no understanding of the different types/categories used in book conservation and bookbinding description. These types/categories can be provided by a thesaurus, and each concept in the thesaurus can be a type of a CIDOC-CRM

5 RDF Working Group, "RDF".

entity. Given that both the CIDOC-CRM and the thesaurus can be expressed as RDF, software applications making such connections can be built using this common framework.

Attention must be paid to the selection of the correct categories for each element of documentation in a schema. For example, if the schema question concerns the material of a component, it would make no sense to offer the option *endband cores*, as this option applies to the type of the component itself and not its material. A reasonable set of options would be *cord*, *tanned skin*, *parchment*, etc. Therefore, different groups of concepts in a thesaurus correspond to different classes/entities of the CRM. In the next section, we explain how these groups were selected for LoB.

Development of LoB Hierarchies

SKOS offers a number of different relations between concepts, and perhaps the most significant one is that of broader/narrower. A concept is considered narrower when it refers to a sub-category of another concept. For example, *laid paper* is a category of *paper* which of course includes many other types of paper. By utilizing this broader/narrower relationship, we effectively build a hierarchy of concepts in the thesaurus. The top levels of these hierarchies correspond to generic concepts. Given that these concepts need to feed classes/entities of the CRM, it is a good idea to make the top concepts match specific CIDOC-CRM classes/entities. We explain next which are the top concepts for the LoB and why.

Top Concepts

The choice of top concepts for LoB was informed by our previous experience of surveying book collections and our understanding of the CIDOC-CRM. In general, the description of bindings includes the identification of a) the different components of the binding, b) the materials that the components are made of, and c) the techniques used to produce these components. We began considering these as essential categories of concepts, which we then extended with additional top concepts after having consulted the CIDOC-CRM specification document. These top concepts were subsequently discussed and confirmed by colleagues from the CIDOC-CRM community. Documenting bindings also involves measuring dimensions and often assessing the condition of components. The CIDOC-CRM classes/entities can accommodate these observations, but the LoB does not include relevant types.

- **Actors**: Provides types for the roles assumed by the CIDOC-CRM entity *E39 Actor*. This top concept includes the roles of contributors of the books, i.e. individuals or groups of individuals who have actively contributed to the production or circulation of the book. This hierarchy allows us to supply values about bookbinding workshops, individuals, booksellers, etc.
- **Objects**: Provides types for the CIDOC-CRM entity *E22 Man-Made Object*. This top concept includes any descriptions of physical things related to the book. It breaks down in a sub-category with many concepts describing types of bindings, such as *stationary*

bindings, *schoolbook bindings* or *Greek-style bindings*, which only provide a high-level description. It also includes a large group of *components* where types of individual pieces of material contributing to the structure of the book are listed, such as *linings* or *endband cores*. Although in natural language, we would use the term *object* to mean the complete book with all its components, *E22 Man-Made Object* does not prescribe the scale in which objects should be considered. Given our specific interest in the making of books, it is appropriate to focus on component scale and describe characteristics for each one of them.

- **Features**: Provides types for the CIDOC-CRM entity *E26 Physical Feature*. The CIDOC-CRM defines *E26 Physical Feature* as physical things which cannot be separated from a carrier (that is, an object). While a bifolium, therefore, is a type of *E22 Man-Made Object* listed under *objects*, the sewing hole in the bifolium is a type of *E26 Physical Feature* listed under *features*. The sewing hole cannot exist outside of a carrier—the bifolium in this case. The modifications on components before they are used on the binding are described as features. Features are also used to describe decoration on skin covers and watermarks in paper, neither of which can exist without the carrier component.
- **Materials**: Types of this hierarchy match the CIDOC-CRM entity *E57 Material*. This provides the different types of materials used to make the components of bindings.
- **Techniques**: Types of this hierarchy provide links to techniques as required by the CIDOC-CRM property *P32* used general technique. In the description of bookbindings, we often directly associate a binding with a technique. We make statements like *the endband has a braided secondary sewing*. Although this phrase is clear to experts, it is not accurate, since the braided secondary sewing is not a thing that we can separate as a component from the book. Its materiality is the thread or thong used to produce the secondary sewing of the endband and not the fact that it is a braided secondary sewing. The braided secondary sewing is the description of the way that the thread or thong has been arranged to produce the finished endband. As such it is not part of the endband, but part of the production of the endband, that is, the activity which took place while the book was being bound. The CIDOC-CRM explains how an actor contributed to the activity of production of an object by following a technique. This is why the top concept *techniques* does not correspond to a CIDOC-CRM class/entity directly. A bookbinding documentation system would make it necessary to capture the event of the production of the book before being able to associate a technique with it. The additional benefit of this approach is that it is then possible to record not only the original production techniques but also all subsequent modifications through other techniques (for example, overcasting) during the history of the book.
- **Places**: Provides types for the CRM entity *E53 Place*. This group of concepts allows descriptions which refer to areas on or within the book. For example, the *head* or *tail* of the book are well-established concepts which can be used to describe a variety of components. The intention here is that the *head of a bookblock of book A* is different to the *head of the bookblock of book B*, but both places are of type *head*;

therefore we can then compare descriptions concerning the same place type from different books.

- **Symbolic objects**: Provides types for the CIDOC-CRM entity *E90 Symbolic Object*. This group of concepts is useful for describing the content of labels and marginalia on a book, such as the shelfmark or the paper manufacturer. These are not physical things that one can observe on the book, but they are the results of mental processing following observation and decoding of the observation—for example, the label holding the shelfmark is a component of a specific material and dimensions, the writing of the shelfmark on the label is a feature as it depends on the carrier, while the shelfmark itself is a symbolic object independent of the carrier. Many of the concepts accommodated in this hierarchy are also useful for bibliographical study.

Hierarchies

Given the large number of concepts and terms in the LoB, effort has been made to organize them for easy retrieval. The high-level concepts are often useful to group narrower concepts, therefore allowing a reasonable discovery path for every concept by simply following the hierarchy. The deeper we move in the hierarchies, the more likely it is that concepts can be used directly as type values in a documentation system. Higher-level concepts may also be used as values when there is uncertainty on which low-level concept is correct. The hierarchy is built so that a more generic term can be used as a value when the choice of a more specific term is impossible. In other words, the hierarchy allows the use of more generic and safer values as opposed to more specific but also more risky values. For example, *Greek-style bindings* can be either *hybrid Greek-style bindings* or *genuine Greek-style bindings*. If we cannot tell which of the two, it is safer to use the broader term *Greek-style bindings*. Some of the concepts have more than one broader concept. To continue with the same example, *Greek-style bindings* is a narrower concept to both *inboard bindings* and *sewn bindings*.

To provide further finding aids, the LoB also features the so-called *collection terms* which do not correspond to concepts but are purely there to reduce long lists of concepts to shorter manageable groups which share characteristics and make navigation in the hierarchies easier. They feature no specific relation between concepts or terms as far as SKOS is concerned. Collection terms are shown with curly brackets { } and should not be used as type values in documentation systems.

LoB Records

Following the SKOS guidelines, concepts form the spine of the thesaurus. They are linked to a number of other entities, as explained next:

- **Preferred label**: Every concept can have a number of preferred labels, one for each spoken language represented in the thesaurus. The preferred label does not constitute an assessment on the suitability of a term to describe the concept, but it is often chosen as the term with the widest use or the term which can help avoid

misunderstandings. We use the preferred label of a concept in English to also name the corresponding concept. This should not confuse the fact that the concept and the preferred label of the concept are two different entities. We only follow this convention because it was convenient for everyday work on the thesaurus.

- **Alternative label**: Every concept can have a number of alternative labels in different languages. There is no limit to the number of alternative labels for a concept. It is often the case that a preferred label for one concept is also an alternative label for a different concept. Alternative labels can still be used to refer to a concept, but they are not recommended because they can lead to confusions.
- **Related concept**: Although the main way that concepts are linked is by using the broader/narrower relationship, as explained above, it is often useful to link concepts which may be relevant in terms of the expert understanding of the binding description. For example, the *mastara* impression created on a page as part of the ruling is useful to be related to the *mastaras*, as in the tool used to create the impression.
- **Scope note**: As mentioned before, we do not rely on the labels to convey the meaning of a concept. Instead, we include a short description of the meaning of the term which forms the scope note. The scope note is not a definition—that is, we include enough detail to explain what the concept is, but we recognize the fact that our descriptions may not be absolute and may not cover all possibilities.
- **Sources**: Much of the development of the thesaurus has been undertaken based on the expertise of the contributors of the workshops, which is how most of the concept hierarchies were populated. The labels for concepts were selected based on their use in documentation and academic writing in the past. Each label is linked to bibliographical references of use. Similar references have been included to indicate the cases when the scope notes for concepts have been borrowed from other resources.

Some labels and therefore their English naming of the corresponding concepts include brackets ( ). These brackets are used in two cases:

- When the preferred label of two concepts is a homonym, we use the brackets to identify one concept from another—for example, *corners (furniture)* as opposed to *corners (cover components)*.
- When the preferred label by itself does not provide enough context to allow an easy association of the label with the concept—for example, *combs* on its own is ambiguous whereas *combs (decorative tools)* is clearer.

URIs and Linked Open Data

Every concept in the thesaurus is given a unique identifier in the form of a URI.[6] Documentation systems which need to refer to the thesaurus concepts can use these URIs to store permanent reference points to the thesaurus. The URIs have been produced

6 Ayers and Völkel, "Cool URIs."

using a service provided by w3id.org. W3id maintains links from these URIs to the thesaurus concepts independent of the current host of the thesaurus, which is the Ligatus Research Centre in UAL. The current redirection to the Ligatus website can change to point to any other website, should the thesaurus be hosted at a different web address in the future. We can, therefore, claim that these URIs are permanent and suitable for use in long-term documentation systems.

URIs also form the cornerstone of the semantic web, where every represented entity needs to have a unique identifier. The service offered by w3id allows a distinction to be made between human visitors who attempt to access the thesaurus through a web browser, and software applications which work with the underlying data and relationships without needing the presentation layer of a web page. The process of serving the right content to each request is called "content negotiation." Requests to a URI by a software application are redirected to a separate server which serves the same data about a concept encoded for use by the application. Researchers who are familiar with querying data through SPARQL can do so through a dedicated endpoint.[7]

Example of a Thesaurus Entry

Preferred label in English and concept name: Greek-style bindings

Scope note: Bindings recognizable by a variety of features including smooth spines, projecting endbands, bookblocks and boards of the same dimensions, frequently with grooved board edges, and fastenings with edge pins, which may be either genuine or hybrid Greek-style bindings.

Broader concept: inboard bindings, sewn bindings
Top concept: objects
Concept URI: http://w3id.org/lob/concept/1377

Future Work

Examples of Use

The thesaurus has already been used as a reference in a number of academic publications in the field of bookbinding history and book conservation. It has been included as one of the thesauri to be used with the MARC standard for bibliographic records, under the code *lobt*, and is thus used for cataloguing.[8] A number of projects have used the thesaurus for categories for content classification based on entities provided by the CIDOC-CRM. These include the Decorated Papers project and the classification of Christopher Clarkson's slide collection.[9] We are in contact with software companies which develop

7 W3C SPARQL Working Group, "SPARQL 1.1."

8 MARC Standards Office, LoC, "Technical Notice."

9 Velios and Martin, "Off-the-Shelf CRM with Drupal"; Ligatus Research Centre, "The Clarkson Slide Archive."

cataloguing systems for cultural heritage institutions to consider embedding the thesaurus in their software.

Translation

While English is considered by some a sufficiently universal language in the book-historical world for there to be no need for versions of the thesaurus in other languages, the creation of versions in other languages will greatly enhance its value and usefulness. Not only will it make it easier for people not familiar with the English terminology to compile descriptions of bookbindings, but there will be terms in other languages that refer to concepts that are not included in the English thesaurus because the concept may not be found outside the geographical area where that language is spoken and has, as a consequence, been overlooked in the English version. It will also allow the scope notes belonging to unfamiliar terms encountered in one language to be read in a language more familiar to the user. Terms in one language are also often borrowed from other languages, showing, for instance, how Greek bookbinders in the early nineteenth century were sent to Italy and France to learn the up-to-date art of bookbinding for the newly liberated country and introduced Italian and French terms into Greek. Sometimes terms will reveal the historical origins of a feature or technique, such as the verb *grecquer* used in French for the process of making the recesses first cut across the spines of bookblocks in the mid-sixteenth century to accommodate sewing supports, to create smooth spines in imitation of Greek-style bindings.

Editorial Control

It is in the nature of a thesaurus applied to a relatively new field of research that new concepts will need to be added from time to time and existing concepts may need to be revised in the light of new and additional information. These revisions and additions will need to be reviewed by an editorial board before they are included, and provision will need to be made for the translation of the additional concepts and labels and revisions of existing concepts as these changes are made, so that the versions in all the different languages remain in step with each other. The adoption of the thesaurus guarantees the long-term editorial commitment to it, and we will continue to explore new ways of improving it and making it more accessible.

Acknowledgements

The development of the thesaurus would have been impossible without the contribution of all the workshop participants: Maria Argyrou, Ivan Boserup, Almuth Corbach, Per Cullhed, Isabelle de Conihout, Roumiana Yureva Decheva, Pierre Delsaerdt, Jana Drevikovska, Anne Eidsfeldt, Iva Gobic, Rene Haljasmäe, Damir Hasenay, Nina Hesselberg-Wang, Christa Hofmann, Victoria Juhlin, Maja Krtalić, Aleksandra Kujawa-Eberharter, Anna Magdalena Lindskog-Midtgaard, María Luisa López-Vidriero, Andrew Megaw, Tomasz Ososiński, Tine Rauff, Pierre-Jean Riamond, Joseph Schirò, Joseph Schrijen, Helena Strömquist, Sonja Svoljšak, Marie Vest, Jedert Vodopivec Tomažič,

Janina Wielowiejska, Guy De Witte. The work by these participants was organized by the workshop facilitators: Aurélie Martin, Alberto Campagnolo, Heather Ravenberg, Francesca Whymark, and Ana-Paula Hirata Tanaka. We would like to thank particularly Aurélie Martin and Alberto Campagnolo who carried on with this work and made very significant contributions to the thesaurus. We would also like to thank Martin Doerr and Maria Theodoridou from the Foundation of Research and Technology Hellas for their guidance during the initial steps of the development. This project was partly funded by the Arts and Humanities Research Council in the United Kingdom.