

**The Verifier: A Training Module for the Penrose Library
Interlibrary Loan Department**

Capstone Project in Partial Fulfillment of Graduation Requirements
For the Library and Information Services Program,
University College, University of Denver

Project online at: <http://www.virtualref.com/_verifier/>

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Chapter One: Introduction

One of the most daunting aspects of librarianship is mastering the plethora of tools available for bibliographic verification. Bibliographic verification, the process of ensuring the accuracy and authenticity of bibliographic citations, is of great importance in the academic library. Academic reference departments deal with faculty and students in every discipline of the sciences, social sciences, and humanities. They must know how to verify everything from sixteenth century English books to physics pre-prints that may just recently have been posted on the Internet.

I. Meeting a Need

The verification process reaches beyond the local institution, however, when patrons place requests for the material to be borrowed from other institutions. At this point, the Interlibrary Loan Department takes over.

Penrose Library at the University of Denver serves over 8,000 students and hundreds of faculty and staff. A majority of the students are undergraduates whose research needs usually are met by materials held by the library. Graduate students and faculty, however, often require interlibrary loan services to meet their research requirements.

Library holdings include over 1.1 million volumes and over 9,000 current serial subscriptions. In addition, the library has been a federal depository library since 1909, currently receiving 76% of depository items. In most cases library holdings are able to adequately meet the needs of students and faculty. The need for interlibrary loan occurs when students or faculty need library materials that are not owned by the University. The library

presently has a non-mediated library loan service, meaning that requests may be submitted directly to the Interlibrary Loan Department without consulting with a librarian.

The Penrose Interlibrary Loan Department is operated by two full-time staff members, one part-time staff member, and from three to six hourly student workers, depending on the workload. The department process between 6,000 and 6,500 loan requests annually.

When Interlibrary Loan staff are unable to properly verify loan requests, they pass them on to the Reference Department for the reference librarians to straighten out. Many reasons exist for unverifiable citations: 1) Errors in one or more elements of a bibliographic citation; 2) Incomplete citation given; 3) Staff unaware of how to verify a citation.

Another layer of complexity has been added over the past several years with the growth of electronic access to indexing/abstracting tools and full-text sources. Electronic access opens doors to indexing tools and online full-text titles never before owned in print. An endeavor designed to enhance access to information can actually obfuscate things if ignored by staff who do not know how to discover the scope of materials covered or how to master the various search syntaxes involved.

When citations cannot be immediately verified, the requesting library user must wait for an even longer period of time. Interlibrary loan requests can be filled in as little as one hour (electronically filled requests using the Ariel system (Landes 1997) and willing staff at the lending library) and as much as many months (requests for overseas materials). Verification problems add more time to the wait. At Penrose, reference librarians must process an average of 60 requests per month, referred to them by the Interlibrary Loan staff.

This capstone project has designed a Web-based training module that will enable Penrose Interlibrary Loan staff to determine which tools can be used to verify items. It is hoped that this training will cut in half the number of interlibrary loan requests that need Reference Department intervention. The project will also have value to students in the Library and Information Services program as they seek to learn the value of reference tools, both print and online.

II. Project Overview

The development of this Web-based project involved several steps, most of which took place in parallel with the others.

A. Identification of Sources

Nearly 400 verification tools were identified for inclusion in the Web site. The sources included traditional paper reference tools, indexing and abstracting sources, online databases, and relevant Web sites. Items selected for inclusion in the database were generally limited to resources owned by or licensed to Penrose Library.

B. Development of Microsoft Access Database

Information about these resources was input into a Microsoft Access database. The database was designed in a relational manner to allow for complex many-to-many relationships. Primary features include title, coverage dates, location, and bibliographic citation of sources. The coverage dates tell the user the relevancy of a source for meeting the verification needs at hand. Complete bibliographic information was included together with location information. Hyperlinks were made for online resources.

C. Assignment of Subject Descriptors

Subject descriptors were assigned to each resource. Vocabulary was controlled in the Access database through the use of complex many-to-many relationships. In this way one resource item can have many subjects, and one subject can be applied to many resources. Subjects include broad academic disciplines (*Arts and Humanities, Social Sciences, Science*), specific disciplines (*Accounting, Biology, Demography, etc.*), and area studies (*Africa, Asia, China, Great Britain, etc.*). A list of subjects is given in Appendix A.

D. Development of Subject Thesaurus

An interactive thesaurus ensures that users are aware of broader, narrower, and related terms that may be relevant to the search process. For example, someone searching for materials on China would need to know that there might be relevant sources under the broader term *Asia*. The thesaurus provides this link for the user.

E. Assignment of Type/Format Descriptors

Following the pattern of subject descriptor assignment, each record will also be assigned one or more type/format descriptor. Types/formats include genre descriptors (Biographies, Bibliographies, Plays, etc.), descriptors denoting analytical tools (*Book Chapters, Festschriften, Journal Indexes, etc.*), information source descriptors (*Government Documents, United Nations Sources, etc.*), resource type descriptors (*Union Catalogs, National Bibliographies, etc.*), and format descriptors (*Microform Sources, Online Databases, etc.*). A list of types/formats used is given in Appendix A. The reason for developing separate relational tables for subjects and types/formats is the way the two lists interact with each other. The interplay of subjects with types/formats produces a very useful

form of access. This is reflected in the Web site by allowing users to use hyperlinks to go back and forth between resource descriptions, subject index lists, and type/format index lists.

F. Publishing of the Database to the Web

The Web site is available to the Penrose Interlibrary Loan staff, but is also intended to benefit others at the University of Denver and worldwide. It is envisioned that it will be of special help to the Library and Information Services Program students at the University.

This Capstone Project is intended to be used in conjunction with the Verifier Web site located at: <http://www.virtualref.com/_verifier/>.

Chapter Two: Review of the Literature

To place the Verifier Project in proper perspective, library literature was searched for similar projects, the growth of interlibrary lending, and the role of verification in the interlibrary loan process.

I. Search for Similar Projects

The Verifier Project can be characterized as a Web-based database with controlled vocabulary containing citations to and abstracts about the scope of coverage of nearly 400 bibliographic resources. A search of the Web for similar projects turned up no results.

The Web did contain numerous Web-based ILL manuals. The New York METRO Interlibrary Loan Committee (METRO Interlibrary Loan Committee 1995) provides a brief manual emphasizing the importance of verification. The site includes a bibliography of over 100 recommended verification sources.

II. Growth of Interlibrary Lending

A review of the literature shows that interlibrary lending and borrowing has been growing over the years. In her 1967 Masters thesis, Sarah Thomson stated that “the majority of academic libraries in the United States engage in little or no interlibrary lending or borrowing” (Thomson 1967, p. 23).

Recently, however, the trend has shifted. ARL statistics demonstrate a 58% growth in interlibrary borrowing from 1991 to 1997, with a 7.9% annual growth rate (Association of Research Libraries 1998, p. 6). Statistics for 1996-97 show that ACRL libraries borrowed over 1.2 million items (Association of College Research and Libraries 1998, p. 25).

Bibliographic utilities such as OCLC and RLIN have revolutionized the way interlibrary loan departments verify requests. As materials are being retrospectively represented in these bibliographic utilities the success rate increases. A 1976 study cited by Kohl revealed a 25% success rate in OCLC for pre-1950 imprints (Kohl 1986, p. 95). As bibliographic utilities have continued to add records from retrospective cataloging projects, this gap has greatly lessened.

III. Verification

A. Definition of Verification

Perhaps the most cited manual for local ILL policies in Virginia Boucher's *Interlibrary Loan Practices Handbook* (Boucher 1997). Boucher defines the verification process as follows:

To verify a bibliographic citations means to

- Confirm or substantiate the existence of the item by finding it in an authoritative bibliography, bibliographic database, CD-ROM, or indexing source.
- Describe the citation completely and accurately, following accepted bibliographic practice. (Boucher 1997, p. 9)

Verification of bibliographic citations is involved in collection development and acquisitions (Joswick 1992, p. 31), reference, and interlibrary lending. Verification is very much a part of the skill of a reference librarian. The focus of this project has been primarily on verification as it relates to ILL, and secondarily as it relates to reference.

B. Is Verification Necessary?

Not everyone agrees, however, of the need for bibliographic verification for ILL requests. Bell and Speer (1988) argue that time spent trying to verify every citation is not time well spent. In support of their view they point out that not every standard bibliographic

element is essential to filling ILL requests. Exact issues numbers, ending pagination, exact article titles, second author's name. They developed the notion of "critical bibliographic elements." These are the elements which, if missing or incorrect, would result in the lending library spending too much time trying to locate the requested item.

After disclosing the results of their internal survey of ILL requests, Bell and Speer acknowledge that it "took longer to acquire unverified requests." (Bell and Speer 1988, p. 499). It just doesn't seem fair to pass the responsibilities of the borrowing library on the lending library. It is not only unfair to the requesting patrons, it also goes against the spirit of the national lending codes.

Boucher defends to need for more rather than less verification:

"Sloppy, inaccurate requests often come back to the borrower unfilled. Requested items should be verified and the verification source noted before the interlibrary borrowing requests is send. To verify a bibliographic citation means to

- Confirm or substantiate the existence of the item in an authoritative bibliography, bibliographic database, CD-ROM, or indexing source
- Describe the citation completely and accurately, following accepted bibliographic practice."

(Boucher 1997, p. 9)

Thompson's thesis demonstrated that interlibrary loan requests that contained complete verification information resulted in a higher proportion of filled requests. (Thomson 1967, p. 102)

The issues here are not just efficiency or maintaining standards, they are issues of time and money (Joswick 1992, p. 32).

IV. Interlibrary Loan Codes of Practice

Since, by definition, interlibrary lending requires cooperation between institutions, codes of practice have been in use from the beginning of ILL in the early years of this century. A brief survey of the role of verification as found in selected code statements is in order.

The 1917 *Code of Practice for Interlibrary Loans* (Code of Practice for Interlibrary Loans 1917), (McMillen 1928, pp. 79-85) makes no reference to the necessity of verification. The focus is rather on scope and extent of interlibrary lending, material that may be lent, loan duration, and safeguards.

The 1940 A.C.R.L *Interlibrary Loan Code* contains a degree of specificity regarding verification not found in other codes:

Application for loans of books should give the author's full name, or at least his surname correctly spelled and accompanied by initials, title accurately state, volume number if in a set, date of publication, publisher, place of publication, and edition, if a particular one is desired. Applications for periodicals should cite the author and title of the article, the complete title of the magazine, the date of the issue, volume and page numbers. All citations ought to be verified; when this proves to be impracticable, the statement "Not Verified" ought to be made and a reference given to the source of the information. (Library World News 1940)

The *National Interlibrary Loan Code, 1968* (Thomson and American Library Association. *Interlibrary Loan 1970*, pp. 1-7), under the heading "Form of Request", states:

1. Materials requested must be described completely and accurately following accepted bibliographic practice.
2. Items requested should be verified and sources of verification given, and for this purpose borrowing libraries should have access to basic bibliographic tools. When the item requested cannot be verified, the statement "Cannot verify" should be included with complete information on the original source of reference. If this provision is disregarded and the bibliographic data appear to be incorrect, the request may be returned unfilled without special effort to identify the reference. (Thomson and American Library Association. *Interlibrary Loan 1970*, p. 5)

The strength of the 1968 admonitions seem to be lacking from the current *National Interlibrary Loan Code for the United States, 1993*:

4.4 Requests for materials for which locations cannot be identified, should be sent to libraries that might provide the requested materials and be accompanied by the statement “cannot locate.” The original source of the reference should be cited or a copy of the citation provided. ...

4.6 The requesting library should transmit all interlibrary loan requests in standard bibliographic format in accordance with the protocols of the electronic network or transmission system used. ... (Boucher 1997, pp. 151-152); (American Library Association 1994).

Bibliographical Center for Research (BCR), the multistate library cooperative serving libraries in six member states, including Colorado, adopts the 1993 *National Code* without attribution (Bibliographical Center for Research 1998).

Local codes seem to require a level of verification more in line with the older national code. The University of Colorado at Boulder *Interlibrary Loan Service Policy* clearly states that requests must be submitted “with complete bibliographic information.” (Boucher 1997, p. 155).

V. Hypertextuality and the Web

One of the primary advantages of publishing the Verifier Project on the Web is that the notion of hypertextuality can be maximized. That is, the user can be prompted to immediately jump to related topics in a non-linear fashion.

Generally, we think of text as linear. In fact, the written word is represented orthographically in linear strings of symbols. Whether the symbols are read from left-to-right, right-to-left, or top-to-bottom makes no difference. Likewise spoken language is linear. Streams of phonemes are uttered in an orderly manner (though we may not always be able to make sense of what is being said).

But mental processes are non-linear. The human mind is capable of jumping from one topic to another. When applying these processes to artificial intelligence, we often refer to this as “hypertext.”

The notion of hypertext is not particularly new. In 1945 Vannevar Bush put forth the idea without using the term (Bush 1945). It was in 1965 that Theodor H. (Ted) Nelson coined the term hypertext at the 20th National Conference of the Association for Computing Machinery (Nelson 1965).

For this project to be successful, the user must be able to jump quickly from one topic to a related topic seamlessly. This could not be adequately accomplished in a linear format such as a paper manual. For this reason, the Web is being used with much thought given to hypertextual links at every possible point.

Chapter Three: Identification of Verification Tools

I. Print Sources

In this age of the computer and Internet access, some are misled into thinking that print sources have become obsolete. This could not be further from the truth. Many of the essential verification tools are still available only in paper, and this will be true for many years to come.

The prime example of this is the National Union Catalog of Pre-56 Imprints. Tens of thousands of entries in this massive 754-volume set are nowhere represented in online catalogs. The reason for this is that major research libraries, the libraries who hold many of these difficult-to-verify publications, have not retrospectively cataloged many of their older items and uploaded them to bibliographic utilities such as the OCLC bibliographic database.

Apart from the author's personal experience in reference work, the most important resource used in the identification process was the American Library Association's *Guide to Reference Books* (Balay, et al. 1996). Now in its eleventh edition, this resource, formerly known as "Sheehy" after the name of the editor of the ninth and tenth editions, has long been the "Bible" of reference work.

To a lesser extent, *Walford's Guide to Reference Materials* (Walford, et al. 1996) was also consulted for this project. Appendix N of the Interlibrary Loan Procedure Manual (Thomson and American Library Association. Interlibrary Loan 1970, pp. 93-97) provides a helpful list of standard print verification sources. Keeping up-to-date with new reference sources can be done with *American Reference Book Annual* (ARBA) (1970-1997).

II. Microform Sources

Microform materials are the buried treasures of libraries. Yet these are easily overlooked by librarians and staff if they are not thoroughly familiar with them. Several important microform collections and their finding aids have been included in this project.

A standard reference source for keeping up with available microform sources is *Guide to Microforms in Print* (1998).

III. CD-ROM Sources

Some verification tools are available digitally through CD-ROM technology. Examples of such sources identified for this project include the index to Evans *Early American Imprints* (available also in paper) and the *Hospitality Database* (available only in CD-ROM format).

IV. Internet Sources

Balay's (Balay, et al. 1996) work has been criticized (Whiteley 1996) for failure to include bibliographic utilities such as OCLC's *WorldCat* or RLG's *RLIN*, as well as electronic versions of many print sources. The Verifier Project has sought to include these sources to a much greater extent than Balay had done.

Internet sources, including telnet, gopher, and HTTP (Web) protocols, have become indispensable aspects of bibliographic verification. Powerful Web search engines such as *AltaVista* allow users to search for exact character strings. This has become a tremendous boon to the verification endeavor, since exact titles can be verified and often the full text of documents can be located.

Internet resources included in the Verifier Project are a several types: freely available online databases, online databases licensed to Penrose Library, telnet connections, individual HTML pages, and PDF (Adobe Acrobat) files.

V. Multiple Formats

Many of the records included in this project are available in multiple formats. For example, the *Air University Library Index to Military Periodicals* is available in paper, in microfiche, on CD-ROM, and on two Internet-accessible sites.

Calling attention to multiple formats has an especially positive didactic byproduct. Most online indexing and abstracting tools have corresponding print versions, often with differing titles. Some may not be aware, for example, that *GeoRef*, the database, is really the online version of the *Bibliography and Index of Geology*. The Web site has brought these related products together under a single title.

Chapter Four: Development of the Microsoft Access Database

I. Explanation of Relational Databases

Microsoft Access is a relational database. In order to understand the need for a relational database in this project it is necessary to contrast flat and relational databases.

A. Flat Databases

A flat database is able to represent information in rows and columns. For expository purposes, let us assume we want to build a database of our friends. We may want to set up the fields as such:

LastName
FirstName
StreetAddr
City
State
Zip
Phone
Fax
Email

Table 1: Flat database field setup: tracking friends.

A flat database would probably handle this project quite well. But now let's assume that our friends have children and that we want our database to contain the names of the children. A flat database might be structured this way:

LastName
FirstName
Child1
Child2
Child3
Child4
StreetAddr
City
State
Zip
Phone
Fax
Email

Table 2: Flat database field setup: tracking friends with children.

In order to represent the children in a flat database it was necessary to arbitrarily create fields for the children’s names (four were arbitrarily created). If a family has four children, our flat database would handle this situation quite well. In cases where a family has no children, the four “Child” fields will go unused, thus wasting space in our database. If a family has six children we are in trouble. We either have to create two more “Child” fields (wasting even more database space), or do some kind of inelegant *ad hoc* fix (such as a general note field with children’s names in it). Clearly these are undesirable solutions.

B. Relational Databases

A relational database is able to represent information in one-to-many relationships. It should be obvious that such relationships are necessary for our “friends” database. One family may have anywhere from zero to any number of children. Relational databases keep track of such relationships through the use of control numbers. The data in our main table might look like this:

ID	Last	First	Street	City	State	Zip	Phone
1	Brown	Bob	79 Main Street	Littleton	CO	80231	303-863-2729
2	Jones	Mary	1 Second Ave.	Denver	CO	80204	303-756-7356
3	Smith	Jim	4456 Walnut	Chicago	IL	61387	302-746-9474

Table 3: Example of a main table in a relational database.

Records in a related table can be associated with the main table through the use of control numbers. The data in our related table might look like this:

ID	ChildID	Child Last	ChildFirst
1	1	Brown	Jimmy
1	2	Brown	Sarah
2	3	Jones	Matthew
2	4	Schwartz-Jones	Betty

Table 4: Example of a related table in a relational database.

We can see from the above that one family can have anywhere from zero to an infinite number of children. The related table (Table 2) is linked to the main table through the presence of the ID field in the subordinate database table. In this way we have a database that can represent one-to-many relationships.

What about situations where one-to-many relationships are not powerful enough? What if we need to represent many-to-many relationships? In fact, databases cannot directly represent many-to-many relationships without losing referential integrity. The way this is done is by using an intermediate table, with each of the outer tables relating to the intermediate tables by means of one-to-many relationships.

To illustrate this, let's use the kinds of relationships developed for the Verifier project. The desired outcome was to have many titles associated with many subjects, and many subjects associated with many titles (many-to-many relationships). In order to make this work, we will have to construct an intermediate table:

ID	Title
1	Title1
2	Title2
3	Title3

LinkID	ID	SID
1	1	1
2	1	3
3	2	1
4	2	2
5	3	2
6	3	3

SID	Subject
1	Subject1
2	Subject2
3	Subject3

Table 5: Title and Subject Tables Linked in Many-to-Many Relationships by means of Intermediate Link Table.

The ID field in the left-most table above and the SID field in the right-most table are each represented in the middle table. Note that one ID field can be associated with many SID fields, and one SID field can be associated with many ID fields.

II. Application of Relationships in the Verifier Project

The Verifier Project utilizes one-to-many and many-to-many relationships in the following manner:

Related Tables	Kind of Relationship
Main Table to Holdings Table	One-to-Many Relationship
Main Table to Subject Table through intermediate Link Table	Many-to-Many Relationships
Main Table to Type Table through intermediate Tlink Table	Many-to-Many Relationships
Subject Table to Thesaurus Table	One-to-Many Relationship

Table 6: Relationships Used in the Verifier Access Database

Figure 1 below illustrates the way these relationships are made within the Access database.

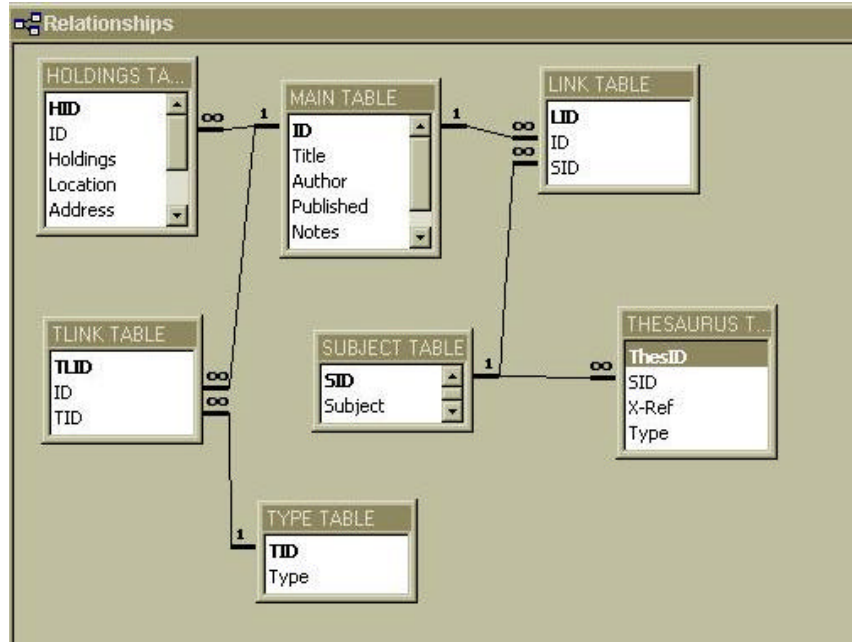


Figure 1: Relationships within the Access Database.

III. Detailed Description of Database Fields

As items were identified for inclusion in the project, they were entered into the Access database through a form with several related subforms (see Figure 2). Each field is described below in detail:

A. Main Form

ID: This identification number, a unique number assigned by Access for control purposes, ensures that this table in the database will retain its referential integrity. That is, links made to this unique number from related tables will never become mistakenly linked to the wrong record.

Title: The notion of title used for this project is not like a cataloger's notion of title. In most cases, the title corresponds exactly to the title of a book. In some cases, however, liberties were taken with titles so as to render the database more useful. Acronyms were often included in title fields, if that is how the item is popularly known. Individual

“holdings” (see below) often have divergent titles between print and online sources. Thus, the notion of title as used in this project is able to tie together all of the various instantiations of a source in a uniform way.

Table 5 gives examples of a few of these divergences:

Official Title (Print)	Verifier Project Title	Reason for Differences
<i>Monthly Catalog of United States Government Publications</i>	<i>Monthly Catalog of United States Government Publications (MOCAT)</i>	Licensed online version: <i>GPO</i> Free online version: <i>GPO Access</i>
<i>Government Reports Index</i> [title varies]	<i>Government Reports Annual Index (NTIS)</i>	Print title varies. Online version: <i>NTIS</i>
<i>Bibliography and Index of Geology</i>	<i>Bibliography and Index of Geology / GeoRef</i>	Online version: <i>GeoRef</i>
<i>Cumulated Index Medicus</i>	<i>Index Medicus / Cumulated Index Medicus / Medline</i>	Monthly edition: <i>Index Medicus</i> , Annual cumulation: <i>Cumulated Index Medicus</i> Online version known as <i>Medline</i> .
<i>Handbook of Latin American Studies</i>	<i>Handbook of Latin American Studies (HLAS)</i>	Print version: <i>Handbook of Latin American Studies</i> CD-ROM: <i>Handbook of Latin American studies CD-ROM: HLAS/CD</i> Web version: <i>HLAS online: Handbook of Latin American studies</i>

Table 7: Title Usage in Verifier Project

The screenshot shows a Microsoft Access form with the following sections:

- ID:** 311
- Title:** JUDAICA : Literature on Jewish History, Culture and Society
- Author:** (empty)
- Published:** (empty)
- Notes:** "The database JUDAICA is a subset of the total LIRIS Database comprising references to books, journals and a selection of articles on Jewish history, culture and society, in Swedish as well as in other languages. (br) At the moment literature available at the Jewish Library in Stockholm, as well as in the university libraries of Uppsala and Lund, is being systematically registered for the JUDAICA database. The aim is to eventually cover all collections of Jewish literature available at Swedish university, research and public libraries." - Web page (br) Not only does this excellent database provide bibliographic citations, it also gives union lists of Swedish libraries that hold the materials.
- Coverage Dates:** 1800-current
- URL:** 311.htm
- Holdings Subform:** A table with columns: Order, BibNo, and a search link. The first row shows Order: 505, BibNo: 311, and a link to "Online Database [Free]".
- Link Subforms:** Two tables. The first has columns: SID, LID, ID, Pull Down, and Type. It lists three records: 598 (Book Sources), 599 (Journal Indexes), and 614 (Online Databases). The second has columns: SID, LID, ID, Pull Down, and Subject. It lists two records: 65 (Judaism) and 123 (Sweden).

Figure 2: Form for entry of data in Microsoft Access.

Notes: This field includes the abstract about the resource being described, subtitles, notes from introductions describing the scope of the item, notes from Web pages, and usage notes. For serial publications, the Notes field was used for continuation notes (“Continues” or “Continued by”). The notes field often contains hyperlinks to related records within the database that are relevant. For example, the *International Repertory of the Literature of Art* (RILA) was continued by *Bibliography of the History of Art: BHA*. Each record contains a hyperlink to the other to save the time of the user.

Another important use of the Notes field was to include hyperlinks to lists of journals covered. Although the Verifier contains a section dedicated to “Journal Lists”, links are provided in the Notes field to make access easier.

Coverage Dates: This extremely important field contains beginning and ending dates of coverage for a resource. Coverage is here defined as the dates of the items covered by a resource. It is important to note that this is not the publication dates of the resource itself, but of the items covered by the resource. In some cases the coverage dates were not clearly given in introductory material or secondary sources. The dates in these cases were estimated. An arbitrary date of 1500 was used for resources covering materials from the early days of publishing.

The notion of coverage date is important to the user who is trying to determine if a given verification tool is relevant to the item being verified. The coverage date is not to be taken as a statement that the University of Denver owns all parts of the verification tool, but rather as the dates of coverage of the item being described.

URL: The URL field was automatically created by the underlying Access query as a convenient way to derive the eventual Uniform Resource Locator (URL) that would point to the Web item record for the particular item. By selecting and copying the information from the URL field in the Access database, pointers could be back to a given record from related item records.

B. Holdings Subform

The Holdings Subform is indicated on Figure 2 above.

Order: This is a numerical field designating the desired sort order of related items in the Holdings Subform. This determines their order of appearance on an individual resource record on the Web site. In some cases it was desirable that online holdings appear at the top of the record. In other cases it was desirable that holdings appear in order of publication.

Biblio: The formal bibliographic citation information is included in this field. Elements include author, title, type of material (such as CD-ROM, online database, microfiche), city of publication, publisher, date of publication, pagination, and online availability.

Location: This field, a pull-down menu to ensure uniformity of entry, designates the general location in Penrose Library. Among the designations are Penrose Book Stacks, Penrose Reference, Penrose Docs, Penrose Microforms, Online Database (Free), Online Database (Licensed), and Storage (Mary Reed Building).

Because the primary design of this project was to train the Penrose Interlibrary Loan Department, online resources licensed to University of Denver people were included. Users not affiliated with the University will not have access to these resources. They will, however, be able to access freely available online resources.

Address: In the case of books and serials, the address is the call number. Library of Congress and Superintendent of Documents numbers will be found in this field. The address also includes the URL for online resources.

Holdings: This field generally contains the years covered by Penrose Library holdings. Miscellaneous notes may also be included in this field.

C. TLink Subform

The TLink Subform follows the Holdings Subform in Figure 2 above.

TLID: This is the unique control number required for referential integrity in the TLink Table.

TID: Type ID number. This number is taken from field TID in the Type Table and placed in field TID of the TLink table to establish the relational link between the two tables.

ID: ID number. This number is taken from field ID in the Main Table and placed in field ID of the TLink table to establish the relational link between the two tables.

Pull Down: Clicking the Pull Down field in the TLink Subform invokes a menu of choices of available types/formats. Presenting a pull down menu eliminates the possibility of error in the form of entry.

Type: Displays the type/format assigned to the title under consideration.

D. Link Subform

The Link Subform follows the TLink Subform in Figure 2 above.

LID: This is the unique control number required for referential integrity in the Link Table.

SID: Subject ID number. This number is taken from field SID in the Subject Table and placed in field SID of the Link table to establish the relational link between the two tables.

ID: ID number. This number is taken from field ID in the Main Table and placed in field ID of the Link table to establish the relational link between the two tables.

Pull Down: Clicking the Pull Down field in the Link Subform invokes a menu of choices of available subjects. Presenting a pull down menu eliminates the possibility of error in the form of entry.

Subject: Displays the subject assigned to the title under consideration.

Chapter Five: Derivation and Assignment of Subject and Type/Format Descriptors

I. Relationship of Subjects to Types/Formats

Subjects, in terms of the Verifier Project, were defined to encompass general academic disciplines (*Arts & Humanities, Social Sciences, Science*), specific disciplines (*Art, Music, Philosophy, Education, etc.*), major geographic regions (*Latin America, Europe, Asia, etc.*), specific countries (*Great Britain, Germany, Japan, etc.*), and miscellaneous subjects (such as *Alternative Press*).

Types and Formats were collapsed together into Types/Formats. Types include analytical tools (*Journal Indexes, Book Chapters* (i.e., indexes to book chapters), *National Bibliographies, Essay Indexes, Report Indexes, Conference Papers & Proceedings, etc.*), directories (*Journal Index Directories, Database Directories, Newspaper Directories, etc.*), and special material types (such as *Government Documents (Foreign)* and *Government Documents (United States)*). Formats include *CD-ROM Sources, Microform Sources, and Online Databases*.

Great advantage was gained by establishing and maintaining Subject and Type/Format tables as separate entities. The subjects could be broken down by type/format, and the types/formats could be broken down by subject. This can be most clearly seen in the final Web product (see Figure 7 below).

When an Interlibrary Loan staff member wants to see verification resources available on the subject *Art*, they will be presented with a further breakdown by type/format: *Biographies, Book Chapters, Book Reviews, Book Sources, CD-ROM*

Sources, Conference Papers & Proceedings, etc.). They can select the appropriate resource according to their need.

Conversely, Types/Format are further analyzed by Subject. By selecting the index screen for *Conference Papers & Proceedings*, a further breakdown by subject is available: *Aeronautics, Africa, Agriculture, Anthropology, Archaeology*, etc.).

II. Inductive Derivation of Descriptors

Both subject and type/format descriptors were assigned inductively. That is to say, no subject or type/format was created until needed in a given situation. This means that every available descriptor has at least one resource assigned to it. It also means that there are omissions in certain areas. For example, *China, India, Japan*, and *Vietnam* are among the currently established headings for Asian countries, but *Korea* and *Thailand* are among countries not included.

III. Principle of Specificity

The principle of specificity was applied to subject descriptors (Chan 1995). If a resource covered *China*, the subject descriptor *China* was assigned. It was not necessary to assign the descriptor *Asia* in this case, since the Thesaurus module provides the task of referring the user up the subject tree.

Chapter Six: Development of the Subject Thesaurus

A simple subject thesaurus was thought to be necessary to refer users to related subjects. It was only in the Subject module that a thesaurus was developed, not in the Type/Format module.

In general, the ANSI standards for thesaurus construction were followed (American National Standards Institute. 1980). Cross-reference conventions *Broader Term*, *Narrower Term*, and *Related Term* were used in the Verifier Thesaurus module. The *Use* and *Used For* cross-references were not needed at this time, given the relatively small size of the database. As the database grows in size, these conventions may be deemed necessary.

I. Broader Terms

The BROADER TERM (BT) reference is employed to refer from a term representing a member of a class of concepts to a term naming that class. (American National Standards Institute. 1980).

The subject *Economics* refers the user to the broader term *Social Sciences*, since many of the available social science resources will also cover *Economics*.

II. Narrower Terms

The NARROWER TERM (NT) reference is the reciprocal of the BROADER TERM (BT) reference. ... NT is employed to identify the term as a member of the class represented by the entry term. (American National Standards Institute. 1980).

The subject *Arts & Humanities* contains cross-references to many narrower terms. Among them are *Architecture*, *Art*, *Classical Studies*, *Drama and Theatre*, *Early American Materials*, *Early English Materials*, *Linguistics*, and *Plays*.

Geographic descriptors, as well, make use of NT cross-references. The subject *Europe* refers the user to over a dozen European countries included in the Verifier project.

III. Related Terms

The RELATED TERM (RT) reference is employed as a guide from a given term to other terms that are closely related in ways other than the genus-species (BT-NT) relationship. ... In general, any two terms bear the cross-reference RT to each other if it is believed that the user, when examining one of them, might want to be reminded of the existence of the other. (American National Standards Institute. 1980).

Anthropology refers the user to the RT *Archaeology* (and vice versa). The subject *Business* refers the user to related terms *Accounting* and *Economics*.

Chapter Seven:

Parser) scheme to manipulate text. A series of macros and submacros were written to split up the Verifier Web pages. The “%%%%” (see Figure 3) is what QUED/M has been programmed to look for to determine the end of a file (Web page). After all pages have been split up and saved with individual file names, they can then be copied back to the PC for FTP-ing to the Verifier Project Web site.

This process is repeated for each of three parts of the Web site: individual items, types/formats, and subjects. Pages are named according to their respective ID numbers. Individual items use the format *nnn.htm* (where *nnn* stands for an individual ID number). Types/formats use the format *tnnn.htm* (where *t* stands for type and *nnn* stands for an individual TID number). Subjects use the format *snnn.htm* (where *s* stands for subject and *nnn* stands for the individual SID number).

At time of project completion there were 377 individual items, 97 subjects, and 55 types/formats.

II. Layout of the Site

A. Home Page

The Web site is located on the Web at http://www.virtualref.com/_verifier/. The Web site was designed with a “frames” motif in three parts: the header at the top of the page, containing the name of the project; the left panel, containing basic site navigation control buttons; and the main section, where the target information is displayed. Reasons for use of frames include the following: 1) the site maintains a consistent look and feel; 2) navigation is easy from any point; and 3) searching of remote databases can be done without leaving the Verifier site. Figure 4 shows the look of the Verifier Home Page.

Navigation buttons allow for instant access to the major parts of the Web site. They maximize the Web's notion of hypertextuality (jumping around at will).

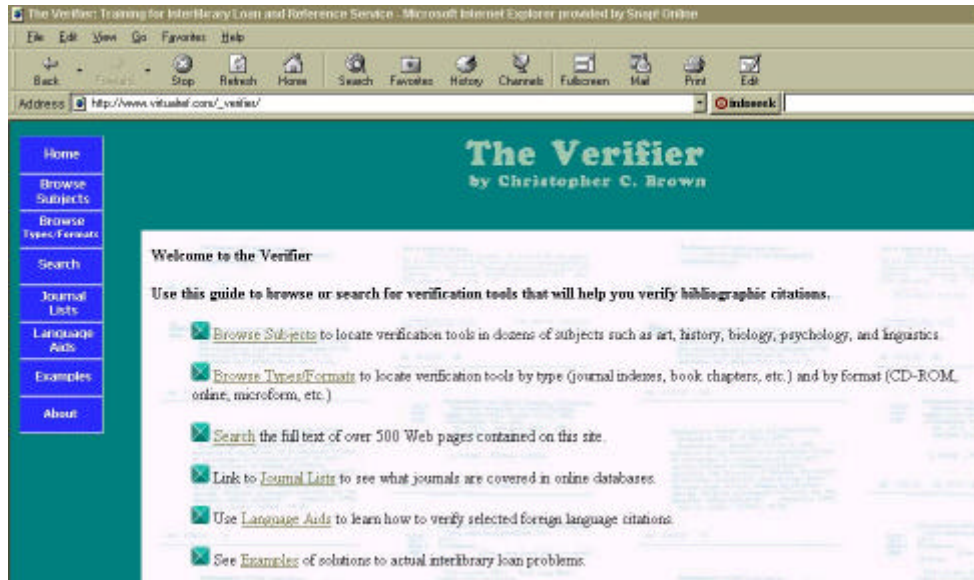


Figure 4: Web site home page.

B. Two Ways to Browse

Marchionini and Schneiderman, in a pre-WWW study, characterized browsing as “an exploratory, information-seeking strategy that depends on serendipity” which is “especially appropriate for ill-defined problems and for exploring new task domains.” (Marchionini and Shneiderman 1988, p. 71).

Users are able to browse the Verifier site by subject and by type/format as described below.

1) Browsing by Subject

Clicking the *Browse Subject* button brings up the Subject Index Screen that facilitates browsing of all available subjects (Figure 5). Subjects are presented in alphabetical order. From this screen there is no reference to the thesaurus features. Those features are available when a particular subject has been selected from the index screen.



Figure 5: Subject index page.

2) Type/Format Index Page

The *Browse Types/Formats* button brings up the Types/Formats index page (Figure 6). Following the same idea as the Subject Index Page, the Type/Format Index Page facilitates browsing of types and formats.



Figure 6: Type/format index page.

C. Pages for Particular Types/Formats

The individual type/format pages are further broken down by subject, and, conversely, the subject pages are further broken down by type/format. Tables, font colors and table cell background colors were used to be visually attractive and to ensure fast identification of relevant resources. Coverage dates have been sorted in ascending chronological order so that scope of coverage can be quickly identified.

The Verifier
by Christopher C. Brown

The Verifier Type/Format Index

Journal Indexes

Accounting	
1921-current	Accountants' Index
Aeronautics	
1915-	Scientific and Technical Aerospace Reports
Africa	
1900-1970	Africa South of the Sahara
1962-current	Current Bibliography on African Affairs
African-Americans	
	Index to Periodical Articles by and about Blacks
Agriculture	
1919-1964	Agricultural Index
1926-current	Biological & Agricultural Index
1979-current	Agricola
1982-	Biotechnology and Bioengineering Abstracts

Figure 7: Type/Format index page for particular type.

D. Search Screen

Chen *et al* have recently demonstrated that both searching and browsing capabilities are valid and necessary access methods (Chen, et al. 1998). In order to facilitate searching, the Verifier Web site has a search engine that searches the full text of the site. This is especially significant in that the searches pick up the text in the Notes field where extensive commentary has often been made. The search button on the left panel brings up a search screen from which users may enter words or phrases. Figure 8 shows the results of a search.

The screenshot shows the 'The Verifier' website interface. On the left is a vertical navigation menu with blue buttons: Home, Browse Subjects, Browse Type/Format, Search, Journal Lists, Language Aids, Examples, and About. The main content area has a teal header with the title 'The Verifier by Christopher C. Brown'. Below the header is a search box containing 'Latin American' and buttons for 'Start Search' and 'Reset'. A message states 'Number of documents found: 96. Click on a document to view it, or submit another search.' Below this is a 'Search Results' section with a table of document titles.

Document Title
Bibliographic Guide to Latin American Studies
Verifier Subject: Latin America
Index to Latin American Periodicals
Latin American Network Information Center (LANIC)
Handbook of Latin American Studies (HLAS)
Inter-American Review of Bibliography: Catalog of Articles, Review Articles and Book Reviews in vols. I-1000 indexes
Verifier Subject: Early American Materials
Index to American Periodicals of the 1700's and 1800's
Verifier Type/Format: CD-ROM Sources

Figure 8: Search screen with search results.

E. Pages for Individual Resources

The core of the Verifier project is the nearly 400 records of individual titles. The structure of the record mirrors that of the Microsoft Access entry form. At the top of the page is the title, followed by coverage dates and notes (abstract). After that is a new table row showing “University of Denver Availability” (Figure 9). Following that are the Type/Format descriptors and the Subject descriptors (not shown in Figure 9).

The notion of hypertextuality was maximized throughout the resource pages. All types/formats and all subjects contain hypertext links (hotlinks) to the index pages for the respective descriptor. This enables the user to engage in “back searching” in a manner similar to Web-based OPACs.

Hypertextuality can also be seen in the inclusion of links to Journal Lists and continuation notes for serials.

The screenshot shows the 'The Verifier' website interface. On the left is a vertical navigation menu with buttons for Home, Browse Subjects, Browse Titles/Formats, Search, Journal Lists, Language Aids, Examples, and About. The main content area is titled 'Handbook of Latin American Studies (HLAS)'. It contains a table with the following information:

Title	Handbook of Latin American Studies (HLAS)
Coverage Dates	1935-current
Notes	Referred to as <i>HLAS</i> . Since 1964, annual issues alternate between social sciences and humanities. Covers all areas of Latin American scholarship, including anthropology, art, economics, education, geography, government, history, international relations, language and literature, law, music, philosophy, sociology, and travel. Journal List
University of Denver Availability	<i>HLAS online: Handbook of Latin American studies.</i> [online database] Guide to Reference Books (Balay) DB266 Online Database (Free) http://creb2.lib.usfhsd/ 1935- . Interface available in English or Spanish. <i>Handbook of Latin American studies CD-ROM: HLAS/CD</i> [CD-ROM] [Washington] Hispanic Division of the Library of Congress, 1995- Guide to Reference Books (Balay) DB266 Peurose Reserve CD-ROM F 1401 H262 1935-1995

Figure 9: Particular item.

The frames layout of the site allows users to stay within the Verifier site, while at the same time performing their searches in remote databases. Figure 10 shows a search screen from the RILA database embedded within the Verifier frames site. By structuring the site this way, the user does not have to repeatedly hit the “back” button to return to the Verifier site.

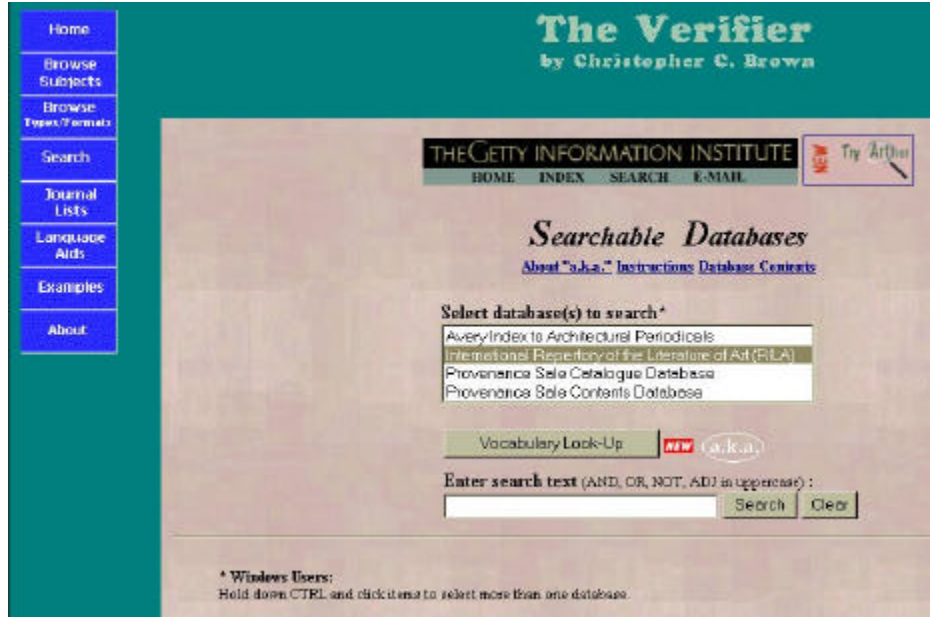


Figure 10: Searches of remote databases from within frames.

F. Journal Lists

The proliferation of online indexes and full-text sources has mixed results: access is much faster and searching is easier, but scope of coverage often remains a mystery. The person verifying bibliographic citations needs to know what journals are indexed by which databases. Many online vendors have provided journal lists on their Web sites, but it often takes a long time to find the vendor's Web site, and then to navigate that site to see if journal lists are provided for specific databases.

In an effort to facilitate direct access, the Journal Lists section provides direct links to vendor's Web sites with journal lists for specific databases (Figure 11).

The third column provides brief information about full text content within the various databases. It is extremely helpful to know if a database contains 100% full text (FT) or a lower percentage of full text (Some FT).

The Verifier
by Christopher C. Brown

Journal Lists

This table provides lists of journals indexed by various indexing and abstracting tools, most of which are accessible online. Full text available is denoted in the third column.

Index/Database Name	Journal Lists	Full Text
ABI/Inform	Journal List	Some FT
Academic Universe (Less-News)	Journal List	FT
AGRICOLA	Journal List	
AIDS & Cancer Research	Journal List via Cambridge via FirstSearch	
America: History and Life	Journal List	
Annual Bibliography of English Language and Literature	Journal List: Go to Main Page and Browse for Journal Titles	
Applied Science & Technology Index	Journal List	
Art Index	Journal List	
Arts & Humanities Citation Index	Journal List via FirstSearch via ISI	
Article First	Journal List	

Figure 11: Journal Lists.

G. Foreign Language Aids

Although the vast majority of interlibrary loan requests in academic libraries are for English language materials (Kohl 1986, pp. 87-88), occasionally foreign language citations are encountered that require verification. Although not a major emphasis of this project, several foreign language resources have been provided. Language aids are included for Arabic, Chinese, Greek, Hebrew, Japanese, Persian, and Russian (Figure 12).

These resources are not mounted on the Verifier project site, but are hosted on remote sites.



Figure 12: Foreign language aids.

Figure 13 shows what a foreign language help screen looks like for Japanese hiragana:

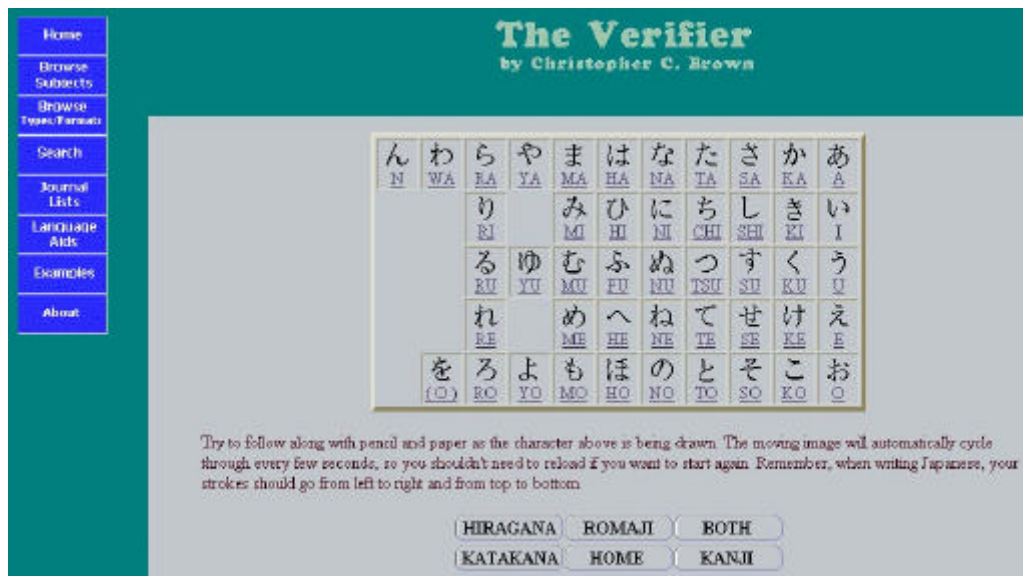


Figure 13: Language help screen for Japanese Hiragana.

H. Examples Section

In an effort to bring together everything contained in the Verifier Project and to provide instruction to those learning the art of verification, an examples section is provided (Figure 14). The examples are from actual interlibrary loan requests or reference interviews. Of course, no names are used so as protect the anonymity of library patrons.

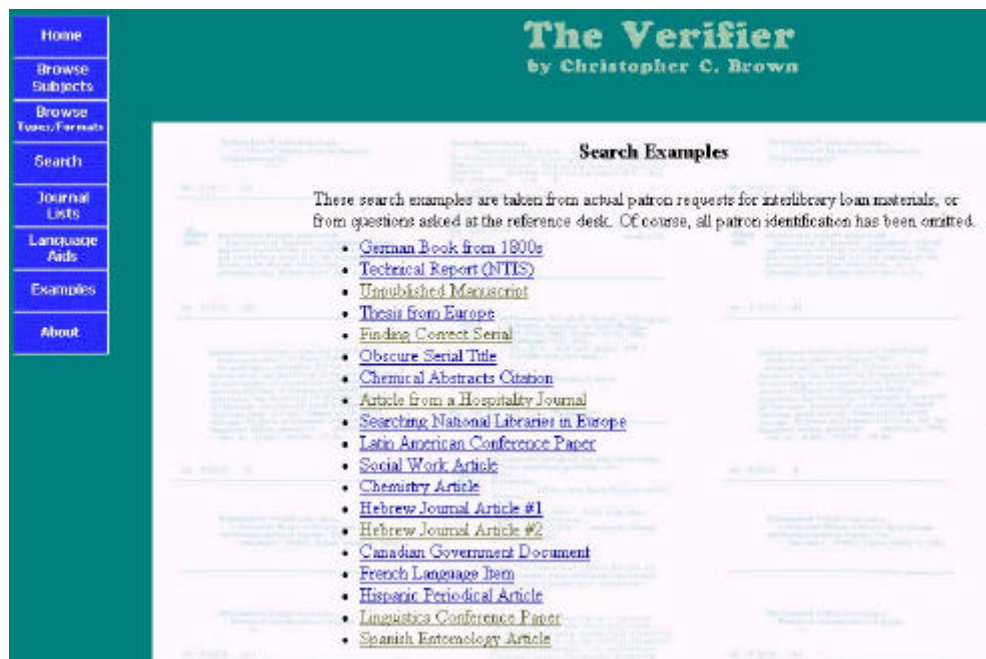


Figure 14: Search examples.

Here is a specific example of a search example (Figure 15):

The screenshot shows the 'The Verifier' website interface. On the left is a vertical navigation menu with links: Home, Browse Subjects, Browse Types/Formats, Search, Journal Lists, Language Ads, Examples, and About. The main content area is titled 'Linguistics Conference Paper' and contains the following text:

Citation given by patron

Renart, Juan Guillermo. Teoría semiótica: lenguajes y textos hispanicos. Madrid: Consejo Superior de Investigaciones Científicas, 1985.

Solution

An initial search of OCLC produced nothing. I then decided to verify the citation in the MLA Bibliography.

TITLE
Semiotica de la reiteracion en poesia: Nuevos aspectos. Vol. I de las Actas del Cong. Internacional sobre Semiotica & Hispanismo celebrado en Madrid 20-25 de junio de 1983

AUTHOR(S)
Renart, Juan Guillermo

SOURCE (BIBLIOGRAPHIC CITATION)
491-496 IN Garrido-Galardo-Miguel-Angel (ed.) Teoria semiótica: Lenguajes y textos hispanicos. Madrid: Consejo Superior de Investigaciones Científicas, 1985. 923 pp.

LANGUAGE
Spanish

PUBLICATION TYPE
book-article

PUBLICATION YEAR

Figure 15: Example section provides instruction using actual ILL examples.

Chapter Nine: Conclusion

The Verifier Project has made available for the first time an online training module that will not only train the ILL staff of Penrose Library at the University of Denver, but will also serve as a resource for library school students in the University of Denver Library & Information Services Program. Beyond the University, this resource will be available for anyone who has Web access to benefit from.

Appendix A: List of Subjects and Types/Formats

Subjects		Types/Formats
Accounting	Japan	Archival and Manuscript Sources
Aeronautics	Judaism	Audio-Visual Materials
Africa	Juvenile Literature	Bibliographies
African-Americans	Labor & Personnel	Biographies
Agriculture	Latin America	Book Chapters
Alternative Press	Law	Book Reviews
Anthropology	Legislative	Book Sources
Archaeology	Library Science	Book Trade Bibliographies
Architecture	Linguistics	Books in Series
Art	Literature	CD-ROM Sources
Arts & Humanities	Mathematics	Citation Indexes
Asia	Medicine & Health	Conference Papers & Proceedings Indexes
Athletics & Sports	Meteorology	Contents Page Services
Australia	Middle East	Database Directories
Austria	Military Science	Dissertation Indexes
Belgium	Music	Essay Indexes
Bibliographies	New Zealand	Festschriften
Biology	Oceanography	Full-Text Online Sources
Business	Philosophy	Government Documents (Foreign)
Canada	Physics	Government Documents (U.S.)
Chemistry	Plays	Intellectual Property
China	Poland	International Document Indexes
Christianity	Polar Regions	Journal Index Directories
Cities and Towns	Political Science	Journal Indexes
Classical Studies	Psychology	Library Catalogs (Online)
Colorado	Public Policy	Library Catalogs (Print)
Communication	Russia	Magazine Indexes
Computers	Science	Maps and Atlases
Criminology	Social Sciences	Microform Guides
Demography	Social Work	Microform Sources
Drama and Theatre	Sociology	Music Scores
Early American	South Africa	National Bibliographies
Early English	Southeast Asia	National Libraries
Economics	Spain	Newsletters
Education	Sweden	Newspaper Catalogs
Energy	Switzerland	Newspaper Directories
Engineering	Technology	Newspaper Index Directories
Environment	Tourism	Newspaper Indexes
Europe	Treaty Sources	Online Catalogs
Foreign Sources	Turkey	Online Databases
France	United Nations	Pamphlet Indexes
General Interest	United States	Plays
Geography	Urban Planning	Poetry Indexes
Geology	Veterinary	Rare Books
Germany	Vietnam	Reference Sources
Great Britain	Women's Studies	Report Indexes
History	Zoology	Serial Catalogs
Hungary		Serial Directories
India		Short Stories
International		Speech Sources
Islam		State Documents
Italy		Transcripts
		Translations
		Union Lists & Catalogs
		United Nations Sources

Appendix B: Titles Included in the Project

Title
ABI/Inform
Abstracts in Anthropology
Academic Universe (Lexis-Nexis)
Accessing Early English Books
Accessions List, Eastern and Southern Africa
Accountants' Index
Africa South of the Sahara
African Catalogue of the Ibadan University Library
Africana Conference Paper Index
Agricola
Agricultural Index
AIDS & Cancer Research
AIDS Bibliography
Air Force Scientific Research
Air University Library Index to Military Periodicals
Allied and Alternative Medicine
Alternative Press Index
Amazon.com
America: History and Life
American Bibliography
American Bibliography: A Preliminary Checklist for
American Book Publishing Record
American Catalog ..., July 1, 1876-Dec. 31, 1910
American Catalogue of Books
American Doctoral Dissertations
American Periodicals, 1741-1900
Annual Bibliography of English Language and
Antarctic Bibliography
Anthropological Literature
Applied Science & Technology Index
Architectural Periodicals Index
Art Index
ARTFL Project: Project for American and French
ArticleFirst
Arts & Humanities Citation Index
Austrian National Library
Automated Catalogue of the Biblioteca Nacional
Avery Index to Architectural Periodicals
BasicBIOSIS
Bibliographer's Manual of English Literature
Bibliographia Hungarica
Bibliographic Guide to Latin American Studies
Bibliographic Index
Bibliography and Index of Geology / GeoRef
Bibliography of Asian Studies

Title
Bibliography of Bioethics
Bibliography of Children's and Young Persons'
Bibliography of Royal Proclamations of the Tutor
Bibliography of Swedish Music Literature
Bibliography of the History of Art: BHA =
Bibliography of the History of Medicine
Bibliography of the Judaica Studies Materials in the
Bibliography of the Swedish History of Literature
Bibliography of Unfinished Books in the English
Bibliotheca Americana, ...1820-61.
Bibliotheca Americana. A Dictionary of Books
Bibliotheca Britannica
Bibliotheca Sinica
Bibliothèque Nationale
Biography and Genealogy Master Index
Biography Index
Biological & Agricultural Index
Biological Abstracts
Biological Abstracts/RRM
Biotechnology and Bioengineering Abstracts
Book Review Digest
Book Review Index
Books from Hungary / Hungarian Book Review
Books in Print
Books in Series in the United States
British Books in Print
British Government Publications: An Index to
British Humanities Index
British Library Document Supply Centre
British Museum General Catalogue of Printed
British National Bibliography
British Newspapers and Periodicals, 1641-1700: A
Bulletin Analytique de Documentation Politique,
Business Periodicals Index
C.R.I.S.: The Combined Retrospective Index Set to
Canada
Catalog of Files and Microfilms of the German
Catalog of Government Patents
Catalog of Reprints in Series
Catalog of the Melville J. Herskovits Library of
Catalog of the Yale Collection of Western
Catalogue Collectif des Periodiques
Catalogue General des Livres Imprimées
Catalogue of Hebrew Books
Catholic Periodical and Literature Index

Title
Center for Research Libraries
Ceramic Abstracts / World Ceramic Abstracts
Checklist of American Copies of "Short-title
Checklist of American Imprints [1820-1844]
Checklist of British Parliamentary Papers in the
Checklist of United States Public Documents,
Checklist of United States Public Documents,
Chemical Abstracts
Chemical Abstracts Service Source Index (CASSI)
Chemical Abstracts. Patent Index to Chemical
Children's Magazine Guide
Chinese National Bibliography
Chinese Newspapers in the Library of Congress: A
Chinese Periodicals in the Library of Congress : A
Christian Science Monitor Index
Civilian Conservation Corps Camp Papers
Collective Catalogue of Periodicals (Spain)
Colorado State Publications Database
ComIndex
Communication Abstracts
Comprehensive Index to the Publications of the
Computer and Information Systems Abstracts
Computer Database
Conference Papers Index
Contemporary Women's Issues
Contents1st
Criminology, Penology and Police Science
Cumulative Book Index
Cumulative Index to ASCE Publications.
Cumulative Index to Nursing and Allied Health
Cumulative Subject Index to the Monthly Catalog
Current Bibliographies in Medicine
Current Bibliography on African Affairs
Current Chinese Serials in the British Library
Current CIS Serials
Current Geographical Publications
Current Japanese Serials in the British Library
DataTimes Newspaper Index
Denver Post Index
Denver Public Library Catalog of the Western
Descriptive Catalogue of the Government
Diabetes Literature Index
Dictionary Catalog of the Jewish Collection
Dictionary Catalog of the Schomburg Collection of
Directory of Published Proceedings Series SEMT:
Directory of Published Proceedings Series SSH:

Title
Dissertation Abstracts International /
Doctoral Dissertations on Asia
Document Catalog
Documentation Economique
DOE Information Bridge
Early English Books, 1641-1700: Selected from
Early English Printed Books in the University
Education Index
Educational Resources Information Center (ERIC)
Eighteenth Century Short Title Catalogue (ESTC)
Electric Library
Electronic Papers in Economics (WoPEc)
Electronics and Communications Systems
Energy Abstracts for Policy Analysis
Energy Index
Energy Information Abstracts Annual
Energy Research Abstracts
Engineering Index
English Books, 1475-1640
Environment Abstracts
Environmental Periodicals Bibliography
Environmental Sciences & Pollution Management
EPA Bibliography
EPA Publications Bibliography
Epilepsy Indexes / Epilepsy Bibliography
Essay and General Literature Index
Ethnic Press
Expanded Academic ASAP
FastDoc
Fiction Catalog
Finding Guides to Selected British Studies
First-line Index of English Poetry
Foreign Newspapers
Forthcoming Books
Gabriel: Gateway to Europe's National Libraries
Gale Directory of Databases
Gale Directory of Publications and Broadcast
GAO Documents
General Accounting Office (GAO) Reports
General Alphabetical Index to the ... House of
General Business File ASAP
General Index to the Sessional Papers .. House of
General Science Index
GEOBASE
GeoRef
Germanistik

Title
Government Reports Annual Index (NTIS)
Guide to Critical Reviews of United States Fiction,
Guide to Indian Periodical Literature
Guide to Reference Books
Guide to Special Issues and Indexes of Periodicals
Guide to the Study of United States Imprints
Half a Century of Soviet Serials, 1917-1968
Handbook of Latin American Studies (HLAS)
Health Reference Center - Academic
Helveticat (Swiss National Library)
Historical Abstracts
HMSO Annual Catalogue
Humanities Index
Ideal
IEE Proceedings. Index.
Index Islamicus
Index Medicus / Cumulated Index Medicus /
Index Medicus List of Journals Indexed
Index of Articles Relative to Jewish History and
Index of Economic Articles in Journals and
Index of NLM Serial Titles
Index of Patents Issued from the United States
Index of Trademarks Issues from the United States
Index Sinicus
Index to 19th-Century American Art Periodicals
Index to American Periodicals of the 1700's and
Index to Book Reviews in the Humanities
Index to Current Urban Documents
Index to IEEE Publications
Index to Jewish Periodicals
Index to Latin American Periodicals
Index to Little Magazines
Index to Microform Collections
Index to Periodical Articles by and about Blacks
Index to Plays in Periodicals
Index to Proceedings of the Economic and Social
Index to U.S. Government Documents
Index Translationum
Indexed Periodicals: A Guide to 170 Years of
Information Science Abstracts
INIS Atomindex
Inter-American Review of Bibliography: Catalog of
Inter-Play: An Online Index to Plays in Collections,
International Bibliography
International Bibliography of Economics
International Bibliography of Historical Sciences

Title
International Bibliography of Periodical Literature
International Bibliography of Political Science
International Bibliography of Social and Cultural
International Bibliography of Sociology
International Hospitality and Tourism Database
International Political Science Abstracts
International Repertory of the Literature of Art
Internet Documents in Economics Access Service
Irish University Press Series of British
Italian Books and Periodicals
Japanese Periodicals Index. Natural Sciences
Japanese Union Catalogue
Journals in Translation
JUDAICA : Literature on Jewish History, Culture
L'annee Philologique
Lathrop Report on Newspaper Indexes
Latin American Network Information Center
LC MARC
LegalTrac
Library & Information Science Abstracts
Library Literature
Library of Congress and National Union Catalog
Linguistic Bibliography
Linguistics & Language Behavior Abstracts
List of Books Printed in Scotland before 1700
List of Colonial Office Confidential Print to 1916
List of Geographical Atlases in the Library of
List of Serials Indexed for Online Users
Literary Index to American Magazines, 1850-1900
Literatures of the World in English Translation
London Bibliography of the Social Sciences
Magazine Index
Magyar Nemzeti Bibliografia = Bibliographia
MDXHealth
Mechanical Engineering Abstracts
Mehr Nicht Erschienen
Microbiology Abstracts
Microcomputer Abstracts
Middle East: Abstracts and Index
Mideast File
MLA International Bibliography
Monthly Catalog of United States Government
Monthly Checklist of State Publications
Monthly Circular of Recent Selected Publications
NASA Patent Abstracts Bibliography
National Environmental Publications Information

Title
National Index of American Imprints through 1800:
National Library of Germany (Deutsche Bibliothek)
National Library of Medicine Audiovisuals Catalog
National Library of Medicine Catalog
National Newspaper Index
National Union Catalog of Manuscript Collections
National Union Catalog, pre-1956 imprints (NUC)
Negro in Print
New Polish Publications
New Sabin: Books Described by Joseph Sabin and
New Serial Titles
New York Public Library Catalog of the Theatre
New York Times Index
Newspapers in Microform, Foreign Countries,
Newspapers in Microform, United States, 1948-
Nineteenth Century Reader's Guide to Periodical
Northern Light
Nuclear Science Abstracts
Occupational Safety and Health (NIOSH)
Oceanic Abstracts with Indexes
OCLC Union Lists of Periodicals
Official Washington Post Index
OpenNet
Periodical Abstracts
Periodicals Contents Index
Personnel Literature
Philosopher's Index
Physical Fitness / Sports Medicine
Poole's Index to Periodical Literature
Popular Periodical Index
Population Index
Predicasts F&S Index
Predicasts PROMT
Project MUSE
Psychological Abstracts / PsycINFO
Psychological Index 1894-1935
Public Affairs Information Service Bulletin (PAIS)
Public Affairs Information Service Foreign
Publications of the Geological Survey
Reader's Guide to Periodical Literature
Real Estate Index
REMARC
Research Libraries Information Network (RLIN) /
RILM Abstracts of Music Literature
Royal Library of Belgium (Koninklijke Bibliotheek)
Science Citation Index

Title
Scientific and Technical Aerospace Reports
Selected Reference on Environmental Quality as
Short-title Catalogue of Books Printed in England,
Short-title Catalogue of Books Printed in the
SIRS Researcher
Social Sciences and Humanities Index
Social Sciences Citation Index
Social Sciences Index
Social Work Abstracts
Sociological Abstracts
Southeast Asia Accessions List
Southeast Asia Subject Catalog
State Education Journal Index
Subject and Title Index to Short Stories for
Subject Guide to Periodical Indexes and Review
Subject Index of Books Published before 1880
Subject Index to Periodicals
Swedish Art Bibliography
Swedish Bibliography - The 17th Century
Swedish Bibliography 1700-1829
Swedish Bibliography of General Education
Swedish Historical Bibliography
Swedish Libraries Articles Database
Swedish Printed Music
Swedish Research Reports and Articles in
Swedish Working Papers in Business
Swedish Working Papers in Economics (S-WoPEc)
Swedish-American Bibliography
Turkiye Bibliyografyasi
Technical Book Review Index
Term Catalogues, 1668-1709
Times Index
Titles in Series: A Handbook for Librarians and
Transcript of the Registers of the Company of
Travel and Tourism Index
Ulrich's International Periodicals Directory
UnCover
Union Catalog of Swedish Libraries
Union List of Artist Names (ULAN)
Union List of Microfilms
Union List of Serials in Libraries of the United
University of California East Asiatic Library Catalog
University of Chicago. Catalogs of the Far Eastern
Verticle File Index
Vietnamese Holdings in the Library of Congress
Wall Street Journal Index

Title
Water Resources Abstracts
WilsonSelect
Women Studies Abstracts
Working Press of the Nation
WorldCat (OCLC Bibliographic Database)
Zoological Record

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