

Trickle-Down Technology: Full Text Access to Journals in the Hispanic American Periodicals Index

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The *Hispanic American Periodicals Index* (HAPI), produced and published by the Latin American Center at the University of California, Los Angeles, is an example of a relatively small, multilingual, specialized bibliographic database developed in the early 1970s that has managed to stay abreast of technological innovations in the field of information science to the extent that it now offers links to full text articles for many of its citations. HAPI indexes the contents of nearly 550 scholarly journals, published throughout the world and of interest to Latin Americanists. Subject coverage includes

all areas of the social sciences and the humanities. Although HAPI operates on a small budget and with a minimal staff, it was initially developed in computerized format and has always been a leader among non-commercial databases in providing technologically current forms of access, via Telnet in 1992 and on CD-ROM the next year. Its Web site opened in 1997. Links to full text articles were released to subscribers in December 2003. This article chronicles HAPI's history, describes its contents, and offers a detailed picture of its full text linking service as well as plans for future developments.

An extraordinary transformation has taken place in the technological development of bibliographic reference sources over the last thirty years. In the early 1970s, even H. W. Wilson Co., which was then the acknowledged leader in the field of commercial indexing, was publishing paper products produced from millions of typed index cards. At about the same time, G. K. Hall Inc. developed the innovative idea of photocopying catalog cards to produce enormous volumes of indexes and library holdings. As room-sized computers became more widely used for non-scientific applications, KWIC-KWOC (keyword in/out of context) indexing, which permuted keywords in titles, was hailed as the wave of the future for the efficient production of bibliographic indexes. Unfortunately, they, too, were massive in size and disappointing in effectiveness, particularly in the areas of the social sciences and the humanities, where authors tend to use "cute" titles that fail to reflect the actual content of the article.

Technology has advanced so far since then that many researchers no longer even remember these early attempts at modernization. Today, if students have to print out a bibliography from an online indexing source and go to the library to find the articles they want, chances are good that they will seek another, more "user-friendly" source. While researchers specializing in mainstream, English language-based disciplines will probably have little trouble finding a plethora of information available in full text on their laptops, those working in foreign languages or area studies will have a more difficult time locating the data they need. Cutting edge technology always begins with the sciences, flows on to the social sciences, seeps into the humanities, and eventually trickles down to area studies. The following is a study of a small, multilingual, bibliographic index developed in the early 1970s that has found a way to keep abreast of the ongoing technological revolution.

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Overview of the *Hispanic American Periodicals Index* (HAPI)

The *Hispanic American Periodicals Index*, produced and published by the Latin American Center at the University of California, Los Angeles, is a specialized database and annual publication that provides access to materials in scholarly journals treating Latin America, the Caribbean basin, the US-Mexico border region, and Hispanics in the United States. Having coverage dating from 1970 to the present, the index includes complete bibliographic citations to articles, book reviews, original literary works, documents, and other materials appearing in nearly 550 periodicals published in 34 countries throughout the world. Indexed journals are written in English, Spanish, Portuguese, French, German, and Italian.

Subject coverage encompasses all areas of the social sciences and the humanities from art, music, literature, and film to material on popular culture, human rights, ethnic and women's studies, politics, ecology, economics, business, and more. Only the pure and technical sciences are excluded.

Each item in the database contains, in addition to the bibliographic citation, up to four multilevel, English language subject headings drawn from the HAPI *Thesaurus*. The *Thesaurus*, which is updated annually, is based in turn on Library of Congress's *Subject Headings*, adapted to meet the specialized requirements of research on Latin America. HAPI Online is updated weekly and presently contains nearly 260,000 records dating from 1970 through 2003. About 7,500 new records are added each year.

Staff

HAPI is a very small organization. The staff consists of three full-time editors, a part-time clerical assistant and two part-time programmers, as well as an invaluable panel of approximately 28 Latin Americanist librarians who volunteer their time to do the raw indexing for the current issues of 6–10 journals each per year. The index receives virtually no institutional support and must cover all its costs, including salaries, through income from sales.

Journal coverage

The journals indexed in HAPI are selected by the editor on the basis of their scholarly value and representative coverage of editorial viewpoint, subject matter and geographical area. They vary in publication frequency from monthly to annually. Weekly news magazines and newspapers are excluded, since these are indexed by other sources such as *Info-Latinoamerica* [1]. For the sake of continuity, the same titles are indexed each year.

Within the selected titles, only materials pertaining to the focused areas of research are indexed. Non-Latin American items are excluded, as are institutional news and other brief news reports. Regular features appearing in the journal under a uniform title are generally listed only once each year with the notation "All issues" and are assigned an inclusive subject heading. Hence, HAPI does not necessarily reflect a complete record of the contents of the publications it covers.

Book reviews were indexed in HAPI from 1976 through 2001. They were excluded from HAPI 1970–1975 because the material for those years was indexed retrospectively for a set of print volumes and space constraints precluded their coverage. They were deleted again beginning in 2002 because reviews, once hard to find, are now readily available through a variety of Web sites and other sources. More significantly, book reviews constituted nearly a quarter of the citations indexed in HAPI. Given these factors, it was determined that the index's finite resources would be better served by including more substantive articles from a larger number of publications. As a result, 80 new titles have been added in the last two years, and the number will continue to grow until maximum annual record capacity, based on staffing availability, is reached. Of course, even when that occurs, significant new journals will continue to be added, since each year old ones cease or are suspended.

Of the 295 journals indexed for HAPI 2003, those published in Mexico, Central and South America, and the Caribbean together constitute 63% of the total number of titles. Every country in Central and South America (except for Guatemala, Honduras and the Guianas) is represented by at least one publication. The Caribbean is covered by titles from Barbados, Cuba, the Dominican Republic, Jamaica and Puerto Rico. Mexico is the

most heavily represented country of origin in Latin America, accounting for almost 19% of all journals indexed. Brazil is next with 10.5%, then Chile with 6% and Venezuela with 5%. In general, these numbers tend to reflect the strength of the publishing industries in the various countries. Table 1 shows the distribution of indexed journals published in Latin America in HAPI 2003.

An effort has also been made to index the major area-specific journals published elsewhere in the world. Currently represented countries include the United States, Canada, Spain, Great Britain, France, Germany, Italy, the Netherlands, Sweden, Switzerland, Israel and Australia. Journals published in the United States and Canada represent just over 24% of the total number of journals indexed, while those from Europe, Israel and Australia account for 12.5%. One should keep in mind, however, that these figures represent only the country of publication. Many journals published in the United States, such as *Journal of Haitian Studies*, *Luso-Brazilian Review* and *Bolivian Studies*, for example, are in fact country-specific in their coverage. Table 2 shows the worldwide origin of journals indexed for HAPI 2003.

The content of the journals indexed for HAPI 2003 is almost equally divided between the social sciences and the humanities. There are also a number of multidisciplinary publications (about 12% of the total). Table 3 presents a more detailed breakdown of subject coverage.

Online access

HAPI has always been a leader in automated reference services. Although it was originally published exclusively as a paper publication – and continues to appear in print today – the index has been prepared from its inception in computerized format, making it relatively easy to convert to an online product when the technology became available. HAPI was released to the public as an online service via Telnet in July 1992. A licensed CD-ROM version appeared the next year and is still offered, since it provides an alternative form of cumulative, automated access for institutions that, for one reason or another, prefer the disc to the Web. Most of HAPI's CD-ROM subscriptions originate in Latin America and Asia.

HAPI was among the first small bibliographic databases to become available on the Web and

Table 1. Number of Latin American Journals Indexed by HAPI in 2003, by Country

Mexico	55	Cuba	3
Brazil	31	Nicaragua	2
Chile	19	Paraguay	2
Venezuela	15	Belize	1
Argentina	12	Bolivia	1
Colombia	12	Dominican Republic	1
Costa Rica	9	Ecuador	1
Peru	9	El Salvador	1
Jamaica	5	Panama	1
Puerto Rico	5	Uruguay	1

Table 2. Number of Journals Indexed in HAPI 2003 by Region

South America	102	Europe, Israel, and Australia	37
U.S. and Canada	72	Caribbean area	15
Mexico	55	Central America	14

Table 3. Journal Subject Coverage, HAPI 2003

Language and literature	45	International relations	4
Multidisciplinary/	35	Music	4
Regional studies			
History	33	Theater	4
General social science	33	Art and architecture	3
Anthropology/	21	Business	3
Archaeology			
Economics	16	Communications	3
General humanities/	15	Feminist studies	3
Aesthetics			
Politics	14	Folklore	3
Sociology	8	Commerce and trade	3
Education	7	Demography	3
Indigenous studies	7	Migration studies	2
Urban studies/	7	Labor studies	1
Regional planning			
Bibliography/	6	Law	1
Information science			
Geography	6	Popular culture	1
Applied science	4		

was certainly the first Web-searchable index specializing in area studies materials. Released in September 1997 following a year's development supported by a grant from the Andrew W. Mellon Foundation, the site has since undergone major enhancements to improve its functionality as well as significant hardware and software upgrades. HAPI Online can be found at the URL: <http://hapi.ucla.edu>.

Among the more interesting features of the site are an online thesaurus and, to aid non-English-speaking users, translations of primary level sub-

ject headings into Spanish and Portuguese that link directly to the Search page. Additional descriptor terms, which use an uncontrolled vocabulary and are indexed to both the title and subject search fields, are included as needed in the record to provide more access points to the information and to translate key words in non-English titles. Users can also opt to limit searches by language or to articles on Hispanics in the United States. HAPI allows researchers to e-mail bibliographies to themselves and offers an online order form for document delivery.

But these services no longer suffice. Access to full text is now the standard for bibliographic databases, yet despite HAPI's record of innovation and adaptation, it has been a challenge to make the leap forward in this arena given the international, multilingual nature of the index and its limited market.

Full text availability

Full text access has been a goal for HAPI since its inception. In the late 1970s, efforts were made to work with a microfilming distributor to put together an annual package of journal issues corresponding to the items indexed in the paper publication. That project faltered, owing largely to the problems of obtaining copyright permissions from journal editors scattered throughout world.

In the mid-1990s, HAPI was invited by a private funding agency to submit a grant proposal for independently digitizing a select group of indexed Spanish and Portuguese language journals to be made available in full text. An investigation of the costs involved revealed that, even with adequate start-up funding, maintenance of the operation would be too expensive for a small organization such as HAPI to support, so the opportunity was turned down. This later proved to have been a wise decision. The group that ultimately received the grant was unable to continue the project after the funding period ended.

It was therefore welcome to hear a few years ago about JSTOR, a joint, non-profit endeavor of several major U.S. universities to digitize full text versions of scholarly journals in a variety of fields. After fulfilling its initial mandate, JSTOR began developing a method of establishing links with indexing sources to make its holdings more widely

available. HAPI began working with JSTOR in the fall of 2002 to program links to relevant journals. Additional links were subsequently established with Ingenta, a commercial organization that digitizes titles from large commercial publishers such as Sage and Carfax presses.

Since JSTOR and Ingenta are large enterprises to which many libraries and other institutions throughout the world subscribe, they were an ideal starting place for HAPI to begin offering full text access to its citations. Together, these sources provide direct links to full text articles in 18 English language journals, representing nearly 16,000 articles indexed in HAPI as of December 2003. Only two titles, the *Hispanic American Historical Review* and *Latin American Perspectives*, are duplicated by the two services, and in both cases the coverage is mainly complementary: JSTOR digitizes the entire run of the journal, excluding recent issues, while Ingenta presently offers access only to recent and current issues.

Although the publications included in JSTOR and Ingenta represent fewer than 10% of the titles presently indexed in HAPI, the fact that they are among those most widely held and heavily used by undergraduate researchers increases the value of their inclusion far beyond their numbers. Of course, only individuals whose institutions subscribe to the services will be able to take advantage of these links free of charge. Those who don't will see a screen informing them that the service is not available.

Indirect links

The ability to provide direct links to several important English language journals represents a significant advancement for HAPI, but a larger goal has been to offer full text access to journals published in other languages, which constitute the majority of the index and which are not frequently digitized by the aggregators of full text data.

To that end, HAPI went directly to the source. Publishers' e-mail and web site addresses are regularly included in the "Key to Periodicals" section of the index. Each site was reviewed in spring 2003 for the availability of full text articles, and those that offered them were recorded for linking purposes. Most sites that include full text do so only for recent issues. Some, however, offer ex-

tensive coverage of back issues and occasionally provide a full run of the title. Links were created to take the researcher from the citation in HAPI to the journal's full text Web page, from which a desired article can be retrieved.

To date, 52 publishers' web sites have been identified, totaling nearly 7,500 indexed records. Most of them are Spanish or Portuguese language titles that are not available elsewhere in full text. Five of the sites, representing around 500 records, are duplicated by Ingenta, but they are included for the benefit of researchers who don't subscribe to that service. Web site coverage of two other publications, the *Journal of Latin American Studies* and *Latin American Music Review*, update JSTOR titles. A complete list of the journals indexed in HAPI having online full text availability is given in the Appendix along with the dates of full text coverage.

Totals and comparisons

Altogether, HAPI Online presently provides direct or indirect full text access to 62 journals from 10 countries representing more than 23,000 records.

The following two figures (1 and 2) compare the number of journals and records supplied by each source.

While JSTOR represents the fewest number of titles, it yields by far the greatest number of articles, owing to its retrospective coverage.

A general breakdown of full text links to journals by place of publication, however, shows a different picture (Figure 3).

Together, the 36 journals from Latin America outnumber those from all other countries combined.

In terms of subject coverage, social science journals clearly outnumber the other categories, but the humanities, history, and anthropology are also reasonably well represented (Figure 4).

Access

The Search screen offers the option of retrieving full text articles only. Whether or not this option is checked, all search results having links to full text show the notation at the end of the citation "Full text may be available," followed by the source in parentheses.

Figure 1: Number of Journals by Source

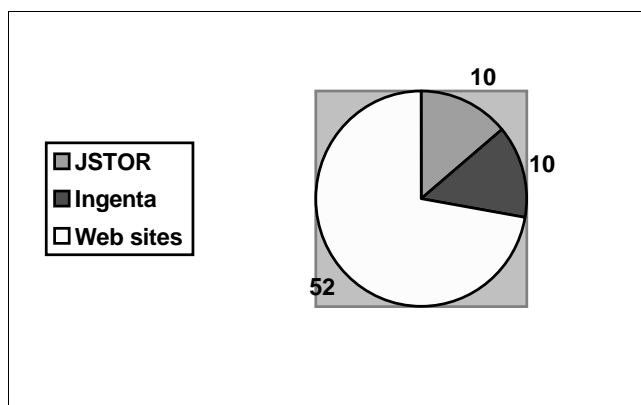


Figure 2: Number of Articles by Source

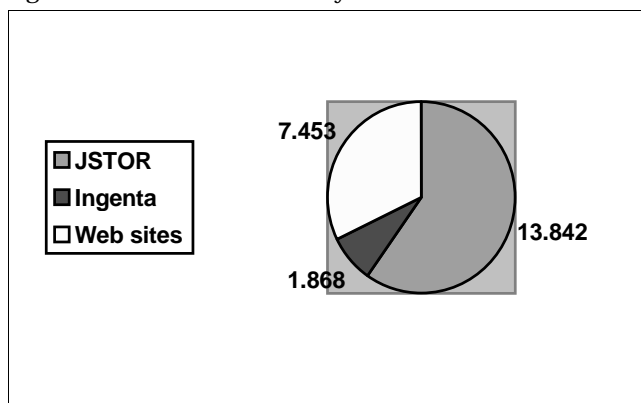


Figure 3: Number of Journals by Place of Publication

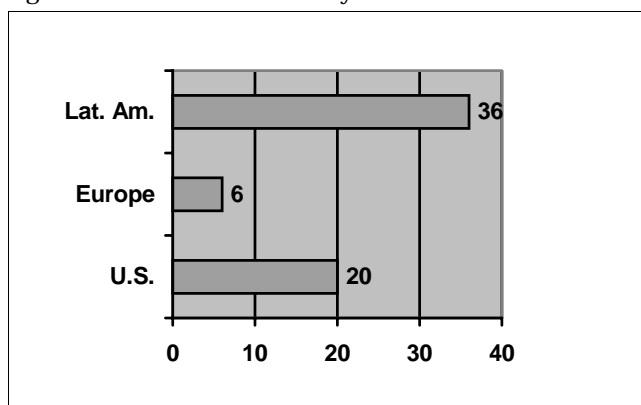


Figure 4: Subject Coverage

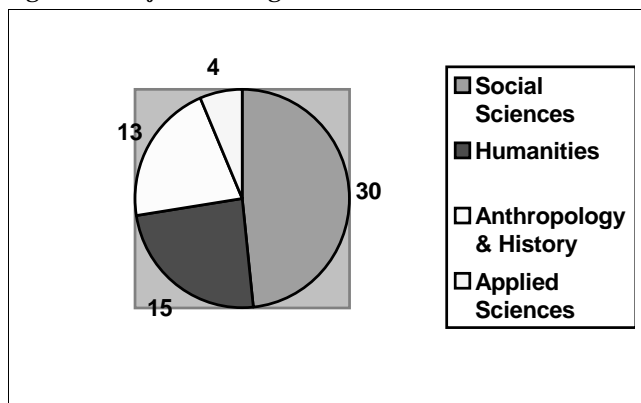
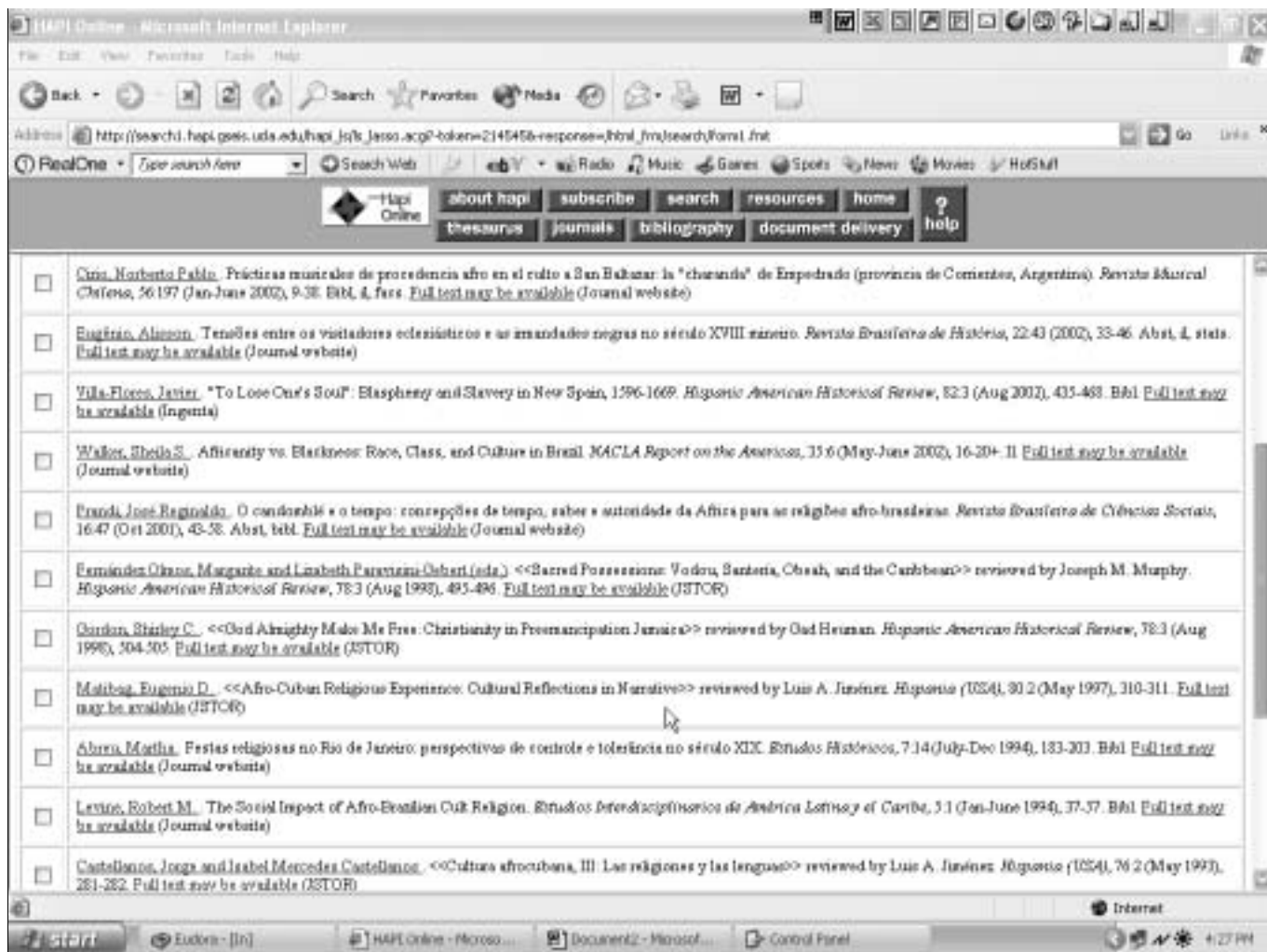


Figure 5: Results Screen



The “may” appears in the notation because, although every effort has been made to ensure that only those issues that contain full text are linked, it cannot be guaranteed that every item indexed by HAPI that is reputed to be available is actually there. For example, some journals may not include full text for book reviews, obituaries, documents, or other materials that have been indexed; HAPI may have indexed a current issue of a journal before it has been digitized; or HAPI’s entry format may differ from that of the digitizers’. While these anomalies comprise a very small percentage of the noted citations, users should be aware that a desired item might be unavailable. To maintain quality control, each web site will be verified once a year when the “Key to Periodicals” is updated, or sooner, if it is noted that an established link is not working.

JSTOR and Ingenta offer systematic protocols that allow HAPI to take the user directly to the desired article. In contrast, each journal web site is unique, making the linking process more difficult. When users click on a journal web site, they are taken to the screen showing the available full text issues of the publication. They must then follow the site’s instructions to reach the article itself. Sites vary with regard to ease of use, but generally the next screen shows a highlighted Contents page of the selected issue. Clicking on a specific article produces the full text.

Most sites are freely available, although a few publishers’ sites, such as that of the Cambridge University Press, do charge for viewing articles. Similarly, if a researcher seeks an article available through Ingenta to which his/her library does not subscribe, a notice will appear on the screen

offering the item for a fee. In those instances, the user will have to decide whether the “pay” is worth the “view.” The volume of document delivery requests received by HAPI, however, suggests that researchers are accustomed to paying for needed information that they can’t obtain free of charge.

Technical aspects

HAPI is a classic example of the development of computer technology for small bibliographic products in the last 30 years. A pilot project developed in the early 1970s used punched cards to input all-capital letter 99-character records using a heavily modified KWIC/KWOC program. Subsequently, the index was prepared for many years on UCLA’s mainframe computer using PL/1X programming language. In 1991–1992, a copy of the database was adapted to MARC format in order to run on the UCLA Library’s ORION system and make it accessible via Telnet.

Beginning in 1996, HAPI underwent a major conversion to a networked PC system that enabled Web access. The new system was built upon a combination of Windows and Apple Macintosh computers running Claris Filemaker Pro 4.1 (a relational database for workgroups) and Apple Macintosh servers running Webstar 2.1 to serve HTTP requests.

A CGI application called Lasso was used to pass requests back and forth between Webstar and Filemaker. Custom programming in the form of Perl, Applescript, and Filemaker routines were used to automate server maintenance, perform updates to the databases, and optimize data to be served via the Web. The present version builds on that basic framework, employing a division of labor between two Apple Macintosh G3 web servers (for web production) and a central Filemaker server as the internal master. Filemaker clients used by the HAPI staff run on Windows PCs.

Although the current system has worked very well and has extremely low technical overhead (requiring only one part time administrator), HAPI’s growing subscriber base and an increasing number of records have created the need for a faster, more scalable strategy for serving Web requests. As a result, HAPI is in the middle of a general upgrade, transitioning the Macintosh-based production web servers to open-source

Linux-based web servers running a combination of Apache and MySQL. The internal master and clients will continue to run an updated version of Filemaker (Filemaker Pro 6.0). The upgrades will replace older equipment with new machines and provide for a more portable system that incorporates widely used, highly reliable, and low cost alternatives for the database and web server software.

HAPI’s most recent feature, links to full text, was written in large part in accordance with protocols established by JSTOR and Ingenta. Access to publishers’ sites was accomplished by linking internal HAPI journal codes to page-specific URLs and starting dates provided by the HAPI editorial staff.

Leading edge

HAPI’s unique combination of links offers a centralized source of access to full text articles appearing in many Latin American (and other) journals that are not being digitized by commercial services. By harnessing readily available technology, HAPI has assembled probably the largest gateway to indexed full text articles on Latin America presently available. Moreover, the fact that most of the sites are accessible free of charge to anyone who has an Internet connection will certainly be welcomed by researchers whose institutions do not subscribe to commercial full text services. Copyright is not an issue because HAPI links only to Web sites that are open to the public.

The full text service was initially released to the public in December 2003, but it will be an ongoing effort. More and more sites are expected to appear in the future as publishers recognize the value of providing full text articles online, and these sites will be added as they become available. HAPI is also presently in discussions with representatives of Pro-Quest to help that company develop a collection of full text Latin American journals that will be linked to the index.

Moreover, as a byproduct of the programming needed to implement the full text links, HAPI is now poised for full compliance with current OpenURL protocols for information exchange. OpenURL linking is the next objective in HAPI’s ongoing efforts to maintain technological leadership among small databases and is expected to become available to subscribers in 2004.

Acknowledgement

Thanks are offered to HAPI's Associate Editor, Orchid Mazurkiewicz, for her editorial assistance and help in preparing the graphic components of the article, and to Tom C. Lai, HAPI's Web programmer, for supplying the technical data concerning HAPI's present operating system.

Note

1. Published by National Information Services Corporation (NISC), Baltimore, Maryland.

Appendix: Full Text Journals Available through HAPI as of December 4, 2003

JSTOR holdings

Geographical Review 1916–1997 (Indexed since v. 82, 1992)
Hispania 1917–1997 (Indexed since v. 53 (1970))
Hispanic American Historical Review 1918–1999 (plus links to recent content 2000–2002) (Indexed since v. 50, 1970)
Hispanic Review 1933–1997 (Indexed since v. 38, 1970)
International Migration Review 1966–1997 (Indexed since v. 11, 1977)
Journal of Inter-American Studies and World Affairs 1970–1999
Journal of Latin American Studies 1969–1997 (Indexed since v. 2, 1970)
Latin American Music Review 1980–1999
Latin American Perspectives 1974–1999
Latin American Research Review 1965–1999 (Indexed since v. 5, 1970)

Ingenta holdings

Bulletin of Latin American Research 14:2 (1995)–
Bulletin of Spanish Studies (Glasgow) v. 77 (2000)–
Bulletin of Hispanic Studies (Glasgow) v. 73–78 (1996–2001)
Colonial Latin American Review v. 7 (1998)–
Hispanic American Historical Review v. 80 (2000)–
Hispanic Journal of Behavioral Sciences v. 21 (1999)–
Journal of Hispanic Higher Education v. 1 (2002)–
Journal of Iberian and Latin American Studies (England) v. 6 (2000)–
Journal of Latin American Cultural Studies v. 9 (2000)–
Latin American Perspectives v. 26 (1999)–
Studies in Comparative International Development v. 34 (1999)–

Links to Publishers' Web sites

Agroalimentaria no. 14 (2002)–
The Americas 57:2 (October 2000)–
Ancient Mesoamerica v. 10 (1999)–
Anuario de Estudios Centroamericanos 20:2 (1994)–
Art Nexus no. 1 (1991) – (Indexed since no. 7, 1993)

Bulletin de L'Institut Français d'Etudes Andines v. 1 (1972)–
Bulletin of Latin American Research v. 20 (2001)–
Bulletin of Spanish Studies v. 79 (2002)–
Bulletin of Hispanic Studies (Glasgow) v. 73–78 (1996–2001)

CEPAL Review no. 71 (2000)–
Chungara v. 33 (2001)–
Colonial Latin American Review v. 7 (1998)–
Cuadernos de Economía (Chile) 37:111 (2000)–

Dados 39:3 (1996)–

Estudios de Cultura Nahuatl v. 30 (1999)–
Estudios de Historia Moderna y Contemporánea de México v. 19 (2000)–
Estudios de Historia Novohispana v. 16 (1996) – (Indexed since v. 17, 1997)
Estudios Interdisciplinarios de América Latina y del Caribe v. 1 (1990)–
Estudios Públicos no. 1 (1980)–
Estudios Feministas v. 9 (2001)–
Estudios Históricos no. 1 (1988) – (Indexed since no. 11, 1993)

Frontera Norte 12:23 (2000)–

Gestión y Política Pública 5:2 (1996) – (Indexed since v. 11, 2002)

Historia (Chile) v. 33 (2000)–
História, Ciências, Saúde: Manguinhos 5:3 (1999) – (Indexed since v. 9, 2002)

Integración y Comercio no. 0 (1996)–
Interciencia v. 18 (1993)–

Journal of Iberian and Latin American Studies (England) v. 6 (2000)–
Journal of Latin American Cultural Studies v. 9 (2000)–
Journal of Latin American Studies v. 29 (1997)–

Latin American Music Review v. 21 (2001)–
Latin American Research Review v. 38 (2001)–
Latino Studies v. 1 (2003)–

Momento Económico no. 112 (November 2000)–

NACLA Report on the Americas v. 29 (July 1995)–
Nepantla v. 1 (2000) – (Indexed since v. 3, 2002)

Papeles de Población no. 24 (1998) – (Indexed since no.
31, 2002)

Política y Gobierno v. 1 (1994) – (Indexed since v. 9, 2002)

Problemas Brasileiros 35:321 (April 2000)–

Problemas del Desarrollo 31:121 (April 2000)–

Reflexión Política 1:1 (1999) – (Indexed since 4:7, 2002)

Región y Sociedad no. 12 (July 1996) – (Indexed since
no. 23, 2002)

Revista Brasileira de Ciências Sociais 12:35 (1997)–

Revista Brasileira de Economia 55:4 (2001)–

Revista Brasileira de Estudos Pedagógicos 79:191
(1998)–

Revista Brasileira de História v. 22 (2002)–

Revista de Antropologia (Brazil) v. 40 (1997)–

Revista de Economia Política (Brazil) 1:1–20:2 (January
1981–September 2000) (Indexed since v. 6, 1986)

Revista de Estudios Colombianos no. 1 (1986)–

Revista de Sociología e Política no. 16 (2001) –
(Indexed since no. 18, 2002)

Revista Mexicana de Investigación Educativa v. 1
(1996) – (Indexed since no. 14, 2002)

Revista Musical Chilena 50:186 (1996)–

World Literature Today 76:2 (Spring 2002)–

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