

A Lifeboat Doesn't Do You any Good if it's not There when You Need it: Open Access and its Place in the New Electronic Publishing Paradigm

Ian M. Johnson

Aberdeen Business School, The Robert Gordon University, Garthdee Road
Aberdeen AB10 7QE, Great Britain
e-mail: i.m.johnson@rgu.ac.uk

Abstract

This paper draws on the results of recent research into digital publishing in Latin America sponsored by the European Commission's ALFA programme. It outlines the growth in publishing in the region. It aims to stimulate reflection on the impact of a system in which most of the publishing is supported by institutions rather than commercial companies, and considers authors' aspirations for their work to achieve recognition, attitudes towards peer review and other aspects of journal quality, the indexing and availability of full text journals, and the sustainability of institutionally supported publishing. Examples are drawn from publishing in the field of librarianship and information sciences on which the original research project was focused.

Keywords: Latin America; electronic journals; quality control; findability; sustainability

1 Introduction

"Our actions must embody these new 'realities' because even when people realize that they are on the Titanic and the iceberg is right ahead, we still need to see the lifeboat in order to jump ship"^[1]

Research into the diffusion of innovation notes the significance of communication channels in transferring awareness and understanding of innovations.^[2] A key part of that process has been the scholarly peer-reviewed journal. We are currently in a state of transition in global scientific communication as the new Information and Communication Technologies are becoming more generally available and more powerful. There is no denying the ability of the Internet to disseminate information rapidly, and it is rapidly being accepted that online access to the full text of scholarly papers should become the norm. However, access to 'free' information on the Web has stimulated a perception that the traditional scholarly journals might be replaced by new services compiled, edited, produced, marketed and distributed without the intermediary services of a publisher, a concept that has been promoted by the emergence of pre-print repositories and of electronic journals produced by individuals. The potential of these new models has proved particularly attractive to researchers and their funders, who had become concerned about the so-called 'scholarly communication crisis', and to librarians who have become concerned about the 'serials crisis.'

In the transition between paper and electronic publishing, discontent about the way in which information is handled is rising, and new experimental models are bound to capture attention. Like most phenomena where one order has to be replaced by a new order, a certain amount of disorder or chaos is inevitable in the transition phase. The 'noise' from the chaos has inevitably reached the ears of governments, and the debate has moved into the political domain. In these circumstances, it becomes a debate in which the awkward questions must be asked and answered clearly, or the solution that emerges may be one that will have to be revisited in more critical circumstances. It also requires us to take such parallels as exist and to examine them to assess what might be learned that is relevant.

Latin America provides an interesting paradigm through which to examine Open Access publishing, because the majority of journals published within the region are published by universities or with financial support from national research councils, other public institutions or professional associations. Commercial journal publishing has been inhibited not only by the relatively weak economies in the region, by the poor infrastructure of the book trade^{[3],[4]}, and by the lack of formal training in publishing. Nonetheless, developments in electronic publishing are taking place in Latin America, and it provides some notable examples of Open Access provision. It may thus

offer some realities as a contribution to a consideration of issues in the more industrialised, wealthier countries that could otherwise easily be dismissed as false hypothesising. The paper begins with a review of the growth of scholarly and electronic publishing in Latin America, and then focuses on the key issues in the debate about Open Access: quality, visibility, findability, and sustainability.

2 Methodology

This paper draws on the results of recent research into journal publishing in Latin America, undertaken with support from the European Commission's ALFA programme ('*America Latina - Formacion Academica*'). The aim of the ALFA Programme is to support collaboration between European and Latin American Universities. In common with most of the research and development programmes that the Commission sponsors, it has to be based on a multinational partnership. In the case of ALFA, the requirement is that there should be at least 3 Universities from Latin America and 3 from the member states of the European Union. In this project, the Robert Gordon University's partners were Queen Margaret University College, Edinburgh; Universidad Nacional Autonoma de Mexico (CUIB); Universidad Nacional del Sur, Bahía Blanca, Argentina; Universidad Federal do Parana, Curitiba, Brazil; Hogskolan i Boras, Boras, Sweden; and Universidad Carlos III, Madrid, Spain. The aim of the project was to identify professional journals published in the region with a view to ensuring their wider availability through digitisation and thus contribute to professional education and development. Many of the projects supported by the European Commission's Research and Development programmes have short names that are intended to capture the underlying idea. This project was no exception. REVISTAS – 'journals' in Spanish - became an acronym for **REd Virtual Sobre Todas las AmericaS**, which translated into English as something meaningful: 'a virtual network across the Americas.'

REVISTAS, focused on the feasibility of digitising journals as an aid to professional development in the field of Librarianship and Information Sciences, but journal publishing in this field is probably representative of many, if not most, disciplines in the region. The paper aims to discuss how traditional patterns of scholarly communication in that region are being or may be impacted by the shift to electronic media and the emergence of alternative approaches to publishing in a way that draws parallels between the Latin American experience and that in other countries where electronic publishing has become more widespread.

As well as reviewing much of the literature on the topic, the project team compiled a list of serial titles based on a number of indexes, journal articles and selected library catalogues. A comprehensive search would need to cover both the print and electronic catalogues of every institution that has taught librarianship and information studies, as well as every National Library in the region, and it must be acknowledged that more titles probably remain to be discovered by individuals more familiar with LIS publishing in their own countries. This is almost implicit in the wide disparity between the numbers of journals reported for each country. A final web search was carried out in early March 2007 using the metasearch engine 'Dogpile' to check for online versions of the list of titles that had been gathered to date^[5].

3 The Growth in Scholarly Publishing in Latin America

There is no reliable evidence for the number of scholarly serials published in Latin America, but there is clear evidence of growth in the number of publications appearing in the languages spoken in the IberoAmerican communities. Whilst data from the ISSN International Centre^[6] shows growth in the number of records for English language serials was c.19% between 2001 and 2006, it also demonstrates much faster growth in records for serials published in Portuguese, Catalan, and Spanish.

Language	2001	2002	2003	2004	2005	2006	Increase
Portuguese	13,244	13,277	13,294	13,310	21,324	21,361	61%
Spanish	37,064	39,782	41,859	43,850	48,222	51,112	38%
Catalan	1,034	1,163	1,248	1,340	1,479	1,555	50%

Table 1: Number of ISSN records per language (Source: ISSN International Centre).

Only 11 of the countries in which these languages are used have national ISSN Centres. The data from them suggests that there are at least 24,816 records for serials published in Latin America.

National Centre	2001	2002	2003	2004	2005	2006	Increase
Argentina	7108	7391	7722	7954	10,040	11,006	55%
Brazil	10001	10001	10001	10000	18572	18573	86%
Chile	1510	1559	1758	1813	2065	2244	47%
Colombia	1754	1754	1742	1743	1743	1798	3%
Costa Rica	146	146	146	146	146	146	0
Ecuador	159	159	159	159	159	159	0
Mexico	3432	3432	3431	3431	3431	3431	-
Portugal	3924	3924	3924	3924	3924	3924	0
Spain	18876	21309	22576	24382	26303	27851	48%
Uruguay	1526	1771	2019	2091	2225	2315	52%
Venezuela	1704	1704	1704	1704	1704	1704	0

Table 2: Number of records in national ISSN Centres (Source: ISSN International Centre)

The apparent absence of growth in the number of recorded serials in some countries, rapid increases in other countries, and variations in the number of ISSN records for countries with similar populations suggests that there is probably significant under-recording in the ISSN system. Moreover, Latin American journals have not always registered an ISSN^{[7],[8]}, and it may be speculated that part of the growth in records may be attributed to belated registration. For example, the growth in records for serials emanating from Brazil (8572) is more than those in Portuguese (8117). There may also be some discrepancy between the data held at the national and international ISSN centres because of the difference between these linguistic and geographic analyses. Moreover, some of the serials published in Latin America are published in English. For example, 14% of the 239 Open Access journals indexed by ISI are English language journals that originate in Latin America.^[9] Moreover, the number of titles apparently published in Portuguese and not recorded by the national centres in Portugal and Brazil is 1,136, which may or may not represent the output of the other countries from where publications in Portuguese may emanate (notably Angola, Goa, Mozambique, and Macau).

Not all the serials recorded by the ISSN Centre could be considered to be scholarly journals. More relevant data may be drawn from Latindex, the main directory of journals that is compiled within the region and principally intended as an aid for university libraries, which lists 15,578 titles, including 2,468 online journals.^[10] However, there may also be some under-recording in Latindex. The main index to library science articles about Latin America that is compiled within the region^[11] has recently been demonstrated to have indexed fewer than half the serials in the field that are now known to have been published.^[12]

4 The Transition to Electronic Publishing

According to the ISSN International Centre, some 50,000 serials are available internationally in computerised formats, compared with 1.2 million in print. Although some under-recording may again be suspected, this reflects significant change since the first experiments with electronic publishing commenced in 1992.

As a contribution to resolving the problems of scientific communication in the region, the participants in a Conference convened by the International Council of Scientific Unions in Guadalajara in 1997 argued that the mechanisms for the promotion and distribution of scientific publications must be improved and suggested "...the establishment of a Latin American scientific electronic periodicals collection."^[13]

Their thinking may have been influenced in part by the proximity to the establishment of *SciELO (Scientific Electronic Library Online)*^[14] in Brazil in 1997. Its Open Access service has since spread to several other countries in the region. In addition, many other journals have established an online presence. For example, of the 220 journals in the field of Library and Information Sciences that are known to have been or are currently being published in the region, the full texts of 48 have now been made available online, but only 2 have met the criteria for inclusion in SciELO. Others are moving in the direction of online publication: 8 more journals publish an Electronic Table of Contents and Abstracts online, and 13 publish their Table of Contents.^[15]

To provide access to these open access journals, a number of aggregator services have been established. The Brazilian Nuclear Information Centre maintains *LivRe*, a portal to more than 2,500 journals, not all of them in Spanish or Portuguese.^[16] A more selective service is provided by *RedALyC, Red de Revistas Cientificas de*

América Latina, el Caribe, España y Portugal, which is hosted by the Universidad Autónoma del Estado de México, and provides access to some 300 peer-reviewed journals in Spanish, Portuguese and English.^[17]

Several commercial database publishers also make a selection of journals in Spanish and Portuguese available. Grupo Océano, a Spanish company, has developed 6 databases covering different fields of knowledge.^[18] EBSCOHost has developed 3 databases^[19], whilst Thomson Learning promotes *Informe*.^[20] Dialnet also includes some Spanish language content.^[21] The most recent entrant to the field is ProQuest, which has developed a new collection of full-text scholarly journals *Publicaciones y Revistas Sociales y Humanísticas (Prisma)*.^[22] There appears to be some overlap between these services, and some even include titles that are freely available through SciELO.

5 Visibility

The growth in the number of serials may be explained by the growth of the local economies and consequently in national Higher Education and research systems. Latin American scholars are no different from those anywhere else in the world in the desire for their work to achieve recognition and make some impact in their field. In common with Higher Education institutions all over the world, Latin American Universities are experiencing the need to manage their educational, research and associated assets more effectively and transparently than in the past. They recognise that making their research and scholarly outputs more readily available will contribute to growth in the recognition of both scholars and institutions, and support the development of new and more fertile relationships between academic staff and departments both nationally and internationally, as well as stimulating economic and social development. Making them available could also facilitate much needed changes in teaching and learning, facilitating the development of a pedagogical environment that is information-rich and fosters the student-centred approaches to learning which are the key to success in the Twenty-First Century ‘Information Society.’

There is generally an expectation that - unless research is related to state security or defence, or is commercially confidential - the results will be published, i.e. that a report will be written for the sponsor, and that it will be summarised in whole or in parts in papers in scholarly journals, and perhaps in magazines intended for practitioners or the lay reader. Part of the assumption that these papers will be published is made possible by an understanding that “scientists in the public sector are largely motivated by intellectual curiosity, peer recognition and the promotion of the public interest rather than by private economic gain.”^[23]

The expectation that the results of research will be published as a journal paper is reinforced by the reward system in the academic world – a reward system that is supported by governments. Research Councils in some Latin American countries have given career incentives and financial rewards to academics who publish in journals of high recognition and visibility. Paradoxically, it is often countries that provide support for the publication of indigenous journals that also focus their reward system for researchers on the publication of their work in international journals.^{[24],[25]} Researchers in Latin America naturally want their papers to be published in international journals to improve access to their work and increase its global impact. These tendencies are enhanced in countries in which national research assessment and funding practices favour submission to international journals over submission to national journals. Elite Latin American researchers in all disciplines have therefore sought to maximise the potential impact of their research by submitting their manuscripts to well-established European and North American journals. For example, a study of the productivity of Mexican PhD holders trained abroad found that the majority had selected international journals indexed by ISI as their publishing outlets.^[26]

Since the evaluation of research work can be influenced to some extent by the visibility and reputation of the journal in which the work is published, the choice of highly visible, prestigious journals as publication outlets has become crucial, especially for scientists.^[27] If journals published in Latin America are to raise their attraction power for researchers in the region to select them as outlets for their research papers, they will clearly have to demonstrate that they are of comparable quality. This implies that quality control procedures will be in place, that other researchers will easily be able to find and access those journals, and that they will become sufficiently well established to become well known.

6 Quality control

The publisher of any journal is responsible for decisions about the level of quality control that is exercised by determining whether papers should be submitted to independent peer review. This will normally involve selecting (and often remunerating) an editor whose standing at least matches the perceived or expected standing of the journal, as well perhaps as some degree of oversight over the selection and activities of the members of any editorial advisory board. The editor makes a significant contribution to the standing of a journal by selecting experts from the editorial advisory board and/or others who can confirm that papers meet an acceptable standard in terms of their academic content. Paradoxically, although themselves largely drawn from the academic community, Latin American scholarly publishers and editors have not consistently addressed the crucial issues of quality control that affect the impact of the contributing authors' research. In the absence of any imperative to improve sales and distribution, peer review mechanisms in Latin American journals have been lax.^{[28],[29]} One consequence has been that the journals often duplicate coverage of subjects, or reprint papers from elsewhere, whilst possibly leaving significant gaps in the coverage of sub-disciplines.^[30]

In general, most scholarly publishing in Latin America has been handled by academics.^[31] One commentator observed that scholarly publishing in the region seemed to be operated by highly committed and altruistic academics trained to do research, but not necessarily to run publishing houses.^[32] These academics develop publishing skills on the job or in some countries through targeted professional development schemes. Latin American scholarly journals, supported by or through public institutions, depend on the annual budgetary allocation to enable them to sustain regular publication. They have been affected by regular financial crises in the region^[33], and have not always succeeded in maintaining a regular publication schedule. These institutional journals are frequently not sold through subscription mechanisms but exchanged for journals from other universities or associations. They rarely reach a wide international audience. Library collections often contain incomplete files of a journal.

To overcome the problems that are endemic in journal production in the region, inclusion in SciELO requires adherence to rigorous guidelines requiring peer evaluation and regular production "thus establishing challenges for the enhancement of the scientific output in the participating countries".^[34] However, the consequence of this policy of selectivity is that SciELO currently makes only c.248 journals available online in full text, a small proportion of the total published in Latin America.

Quality control also includes the technical preparation of the journal. Journal publishers incur significant costs in getting the product to the reader. Editorial offices have to be maintained for logging new papers, tracking their progress, and generally communicating with the authors, referees, printers, etc. A small but increasing number of publishers in Latin America are now using Open Journal Systems^[35], for managing journal production, particularly in Brazil where it has been translated into Portuguese (SEER - Sistema Eletrônico de Editoração de Revistas^[36]). Despite the fact that most papers are now submitted in electronic format, there is almost always a certain amount of effort necessary to check citations for accuracy, to create links to CrossRef, and to complete the proof reading and copy-editing. Some publishers and editors of open access journals appear to be attempting to transfer some or all of this responsibility to their authors. Whether that will be acceptable to authors and practicable remains to be seen.

The adoption of online format for some journals had not overcome the problem of irregular publication and consistent access. Some journals had not been published for several years; others had been only short-life experimental projects. Some other, single issues of papers or journals appear to have been converted into Permanent Document Format (pdf) solely at the initiative of their author or editor and made available through a repository or an aggregator such as RedALyC. In some cases, the URL had changed without a link to the new URL being created, or the links to the text of articles were broken. There is already evidence that some online journals are not attracting sufficient papers to maintain a regular publication cycle.

7 Findability

Making the journals or papers available online is of little value unless there are good indexing and abstracting services to guide the potential users to papers that are relevant to their interests. The international visibility of scholarly periodical publishing in Latin America has been the object of a number of studies.^{[37],[38],[39]} Whilst the regions major news magazines and newspapers are indexed in several subscription-based online sources^{[40],[41],[42]}, only a small proportion of scholarly periodicals from developing countries is indexed and abstracted by the major scientific secondary databases.^{[43],[44]}

A central archive of indexing data and a cross-site searching facility for SciELO is based in the original office at BIREME – *Biblioteca Regional de Medicina* in São Paulo. Recently, the SciELO index to its Brazilian journals has recently been uploaded into OCLC's WorldCat.^[45] SciELO Chile will be uploaded shortly, and other SciELO partners are expected to follow. This provides an alternative access point for potential users of the journals included in SciELO, and will arguably raise their visibility and use, at least amongst OCLC's member libraries. OCLC has also recently added to its database the indexes (*Clase* and *Periódica*) that have been compiled by the Dirección General de Bibliotecas at the Universidad Nacional Autónoma de México (UNAM-DGB) for the last 28 years, covering 400 of the region's journals in the arts, humanities, social and pure sciences.^[46] A similar number of journals, possibly the same collection, are now included in SCOPUS. However, the full texts of few of these journals are available online.

Research papers made available internationally through electronic publishing appear to have a higher national and global impact than achieved through publication in an indigenous printed journal. However, it is also important that the indexing service is widely known, and this is by no means the case. An interesting example is provided by the most substantial index to journal articles on Librarianship and Information Sciences from or about Latin America that is compiled within the region, itself the sole survivor of attempts made to establish such a service in several countries. INFOBILA was initiated in 1986 by the Universidad Nacional Autónoma de México Centro Universitario de Investigaciones Bibliotecológicas.^[47] It is based on collaboration with a network that covers 13 countries in addition to Mexico: Argentine, Brazil, Chile, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Panama, Peru, Uruguay and Venezuela. It has been freely available online since 1997 and has recently been redeveloped with the capacity to include or link to the full-texts of journals. However, it indexes only a handful of the online journals produced in the region. It is also disappointing that it seems possible that INFOBILA may be almost completely unheard of in the countries in which the indexed journals originate. An impromptu survey of the c.350 participants of a conference on digital libraries in Argentina in October 2005 suggested that only about 10 people there were familiar with INFOBILA. There is some evidence to suggest that, as a result of their availability through SciELO, a number of English language journals originating in Latin America and indexed by ISI are attracting more attention and more citations by other researchers than previously. A study of the 5 journals published in English in Brazil that have been indexed by ISI for at least 5 years, and available in full-text on SciELO^[48] for at least 2 years revealed that their impact factor had more than doubled since their inclusion in SciELO.^[49] Interestingly, Thomson ISI has recently agreed to begin including journals in Spanish in its Citation indexes from January 2006, possibly under pressure from its considerable Spanish customer base (as well, perhaps, as incipient competition from new indexing services such as Google Scholar^[50] and SCOPUS^[51]). The impact of this on author preferences for publishing outlets for their research remains to be seen.

Having good and well-known indexes goes only part of the way towards making the full text available. The difficulty in tracing the printed journals has been exacerbated by a relatively large production of new titles with small readerships and short life cycles.^[52] Commercial publishers seeking to digitise some of the region's journals have already experienced difficulty in finding complete sets to digitise, and the searches conducted for the REVISTAS project confirmed the haphazard distribution of copies of many of the printed journals. However, few of the online journals appear to have taken the steps necessary to publicise their existence, or to ensure that their contents are discovered by registering with a variety of aggregators and search engines. In many cases there was no evidence of registration of ISSNs. Coverage by the IberoAmerican e-journal aggregators was poor. *Livre* included only 29 of the 90 librarianship and information sciences journals published in Spanish and Portuguese (including those published in Europe), whilst *RedALyC* included only 8. The principal European aggregator of journals in Spanish and Portuguese (and other open access journals) is *REI*, *Recursos Electronicos de Informacion*, a service maintained by the Universidad de la Rioja in Spain.^[53] *REI* is maintained on behalf of REBIUN, the Spanish University libraries consortium and is not limited to peer reviewed journals, but still included only 15 of the 90 titles. Moreover, the aggregators and indexes are not necessarily well known. *RedALyC* was not known to the REVISTAS partners from the region, nor to senior LIS professionals based in the same city as its host institution. Bypassing the aggregators may overcome their deficiencies. SciELO is now beginning to use CrossRef^[54] to create links to and from the full text of papers in the journals that it hosts, but there are few signs that this practice has yet been more widely adopted.

8 Sustainability

Much of the fabric of online publishing in Latin America remains supported by institutions. Most of the journals are published by universities. SciELO is supported by FAPESP - Fundação de Amparo à Pesquisa do Estado de São Paulo in collaboration with BIREME - Centro Latino-Americano e do Caribe de Informação em Ciências da Saúde, and CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico. Anecdotal comments

suggest that its principal funders may be questioning why a local agency should be funding what has become an international service. RedALyC is alleged to depend to some extent on international aid from the Spanish government.

The technology lends itself to creating electronic collections that offer a range of features that add value, and that will be increasingly expected as standard features of e-journal services. Features such as cross-file searching, browsing, saved search histories, Table of Contents alerts by email, and citation linking must be introduced into the region's electronic journals, presenting challenges in terms of the availability of both skills and finance. That must raise concerns about the future sustainability of these journals. There is already evidence that some online journals had not been published for several years; others had been only short-life experimental projects.

The insecure financial base must raise concerns about long-term preservation of those electronic journals that do appear, particularly as many of the region's National Libraries do not have a preservation policy that extends to electronic media produced in their country – or the resources to implement one.

9 Discussion and Conclusions

In Latin America, the rewards and recognition for researchers and other academics are closely linked to the perceived quality of their published outputs. The evidence indicates quite clearly that the absence of any commercial imperative to raise quality to improve sales and distribution has had a damaging impact on quality controls. The publishers and editors of the vast majority of the electronic journals that have emerged to date seem largely to be continuing their previous neglect of quality control.

Visibility is clearly an issue for Latin American researchers. They want their publications to be highly visible. The evidence tends to indicate past failure in efforts made in Latin America to raise awareness of the contents of journals and to ensure adequate distribution of copies to meet potential demand. Making the full text of journals freely available online alone has not yet proved any more effective.

“Findability precedes usability”.^[55] The evidence is that the region's printed journals have not been well served by international or indigenous indexing services. Although some efforts are now being made to improve the arrangements for indexing, these only serve to highlight the limited availability of full-text sources.

The final issue to emerge from this study was concerns about the sustainability of publications and related services that depend on institutional support. The evidence tends to indicate that, to date, personal or institutional circumstances have contributed to the short life of many Latin American journals and newsletters. Simply switching to electronic media has not yet entirely resolved these issues.

The problems that have been discussed may be peculiar to Latin America. The examples drawn from this review of the region's literature of Librarianship and Information Sciences may not be exactly paralleled in every discipline, and further research to test the findings from this study on a wider scale is needed, and needed soon. However, the realities of scholarly communication in Latin America should prompt a pause for reflection by anyone interested in securing the future of scholarly communication at a time when the existing system is undergoing significant changes.

The aim of the paper was to use these realities to provide a fresh perspective on some of the global implications of the shift to electronic publishing, particularly to inform the debate about open access publishing, and to point to issues that still appear to need further consideration before significant changes in the system of academic communication are put in place. The situation that now exists may, in some respects, be resembled to the position of the ‘Titanic’ approaching the iceberg. The scale of the problem that confronts us is enormous. Just like the bulk of the iceberg, the vast majority of research papers are out of sight, not hidden below the surface but because they have not yet been written. The arguments about the most appropriate course to steer are complex. Faced with what is perceived as a major threat to scholarly communication, there are members of the research community and the library community who seem to want to abandon ship immediately without any clear idea of whether that is the safe course of action. The experience of institutionally supported publishing in Latin America and the faltering emergence of electronic journals there suggests that open access publishing could prove to be as much use as a safeguard for scholarly communication as a trap door on a lifeboat.

Acknowledgement

The author gratefully acknowledges the contribution made by the partners in REVISTAS and particularly Dr. Virginia Cano to the preparation of this paper.

Notes and References

-
- [1] REINSBOROUGH, P. De-colonizing the revolutionary imagination: values crisis, the politics of reality and why there's going to be a common sense revolution in this generation. *The Journal of Aesthetics and Protest*, 1 (2), August 2003. [online]: http://www.journalofaestheticsandprotest.org/1/de_colonizing/8.html [Accessed 8 April, 2005]
- [2] ROGERS, E.M. *Diffusion of innovation*. 4th ed. 1995. New York, U.S.A.: Free Press.
- [3] JOHNSON, P.T. A brief overview of the book trade in Spanish speaking Latin America *in Seminar on the Acquisition of Latin American Library Materials (19, 1974, Austin, Texas). Final report and working papers*. 1976. Amherst, Mass.: SALALM Secretariat pp. 55-59
- [4] BABINI, D.; SMART, P. Using digital libraries to provide online access to social science journals in Latin America. *Learned Publishing*, 19 (2), 2006, 107-113
- [5] 'Dogpile' [online]: <http://www.dogpile.com/> [Accessed 1 March 2007]
- [6] ISSN International Centre [online] <http://www.issn.org/> [Accessed 15 April 2007]
- [7] CANO, V. Bibliographic control and international visibility of Latin American periodical publications. *in: Indicators for developing countries, edited by R. Arvanitis and J. Gaillard*. 1992. Paris: ORSTOM. pp. 511-526.
- [8] CANO, V. Characteristics of the publishing infrastructure of peripheral countries: A comparison of periodical publications from Latin America with periodicals from the US and the UK. *Scientometrics*, 34 (1), 1995, 121-138.
- [9] MCVEIGH, M.E. *Open Access journals in ISI databases: analysis of impact factors and citation patterns*. 2004. [online]: <http://www.thomsonscientific.com/media/presentrep/essayspdf/openaccesscitations2.pdf> [Accessed 15 January 2006]
- [10] Latindex -Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal. [online]: <http://www.latindex.unam.mx> [Accessed 15 April 2007]
- [11] INFOBILA [online]: <http://cuib.laborales.unam.mx> [Accessed 15 April 2007]
- [12] JOHNSON, I.M.; CANO, V. Electronic publishing in Librarianship and Information Sciences in Latin America – a step towards development? Forthcoming.
- [13] CETTO, A.M.; ALONSO, O., *editors. Revistas científicas en América Latina – Scientific Journals in Latin America*. 1999. Paris: International Council of Scientific Unions; Mexico: UNAM, CONACYT, and Fondo de Cultura Económica. pp. 461-466
- [14] SciELO [online] - <http://www.scielo.org/> [Accessed 7 August 2004]
- [15] JOHNSON, I.M. REVISTAS – online LIS journals in Latin America. Focus on international library and information work, 2007. (forthcoming)
- [16] LivRe [online]: <http://livre.cnen.gov.br/> [Accessed 1 March 2007]
- [17] RedALyC [online]: <http://www.redalyc.com/mx> [Accessed 3 January 2006]
- [18] Grupo Océano [online]: <http://www.oceano.com/oceano/oceano.html> [Accessed 5 December 2005]
- [19] EBSCOHost [online]: <http://www.epnet.com/> [Accessed 15 December 2005]
- [20] Informe [online]: <http://www.gale.com/pdf/facts/inform.pdf> [Accessed 5 December 2005]
- [21] Dialnet [online]: <http://www.dialnet.com.mx> [Accessed 12 April 2005]
- [22] Prisma [online]: <http://www.il.proquest.com/division/pr/05/20050408.shtml> [Accessed 5 December 2005]
- [23] UHLIR, P.F. Re-intermediation of the Republic of Sciences: moving from intellectual property to intellectual commons. *Information Service and Use*, 23 (2/3), 2003, 63-66

-
- [24] VESSURI, H. Estrategia de valoración de las revistas científicas Latinoamericanas [Strategy for evaluation of Latin American scientific journals]. in: *Publicaciones científicas en América Latina*; edited by A. Cetto and K. Hillerud. 1995. Mexico: Fondo de Cultura Económica. pp. 200-210
- [25] BONILLA, M., and PEREZ ARAGON, M. Revistas Mexicanas de Investigación Científica y Tecnológica. *Interciencia* 24(2), 1999, 102-106.
- [26] LICEA de ARENAS, J.; SANTILLÁN-RIVERO, E.; ARENAS, M.; VALLES, J. Desempeño de becarios Mexicanos en la producción de conocimiento científico ¿de la bibliometría a la política científica? *Information Research*, 8(2), 2003. paper no. 147 [online]: <http://InformationR.net/ir/8-2/paper147.html> [Accessed 15 January, 2006]
- [27] RAVETZ, J.R. *Scientific Knowledge and its Social Problems*. 1971. Oxford: Clarendon Press
- [28] CANO, 1992, *ibid*.
- [29] MENEGHINI, R. Brazilian production in Biochemistry: the question of international vs domestic. *Scientometrics*, 23 (1), 1992, 21-30.
- [30] DIAZ, I.G.; AGUILAR, G.S. Las revistas científicas: su problemática en América Latina y El Caribe. [The problems of scientific journals in Latin America and the Caribbean.] *in: Revistas científicas en América Latina - Scientific Journals in Latin America*; edited by A.M. Cetto and O. Alonso. 1999. Paris: International Council of Scientific Unions; Mexico: UNAM, CONACYT, and Fondo de Cultura Económica, p. 231
- [31] CANO, V. International visibility of periodicals from Ireland, India and Latin America. *Knowledge and Policy*, 6 (3-4), 1992-1993, 55-78
- [32] GOMEZ, Y.J. A propósito de un Ejercicio de Evaluación de Seriadas Científicas. [A proposal for an evaluation of scientific journals.] Paper presented at the *Second International Workshop on Scientific Publishing in Latin America*, Guadalajara, Mexico November 27-30, 1997. [Unpublished]
- [33] BABINI; SMART, 2006, *ibid*.
- [34] GREENRIDGE, E. An overview of the PAHO Virtual Health Library. *in: Models of Cooperation in U.S., Latin American and Caribbean Libraries: the first IFLA/SEFLIN international summit on library cooperation in the Americas*; edited by B.E. Massis. 2003. Munich, Germany: K. G. Saur. pp.45-51
- [35] Open Journal System [online]: <http://pkp.sfu.ca/ojs/> [Accessed 15 April 2007]
- [36] SEER - Sistema Eletrónico de Editoração de Revistas [online]: <http://www.ibict.br/secao.php?cat=SEER> [Accessed 15 April 2007]
- [37] CANO, 1992, *ibid*.
- [38] KRASUKOPF, M.; VERA, M.I. Las revistas científicas de América Latina acreditadas en el ISI [Latin American journals indexed by ISI]. *in: Publicaciones científicas en América Latina*, edited by A. Cetto and K. Hillerud. 1995. Mexico: Fondo de Cultura Económica. pp. 168-175.
- [39] CETTO, A.M.; HILLERUD, K., editors. *Scientific publications in Latin America*. 1995. Mexico: ICSU, UNAM, and Fondo de Cultura Económica. p. 305
- [40] Info-Latinoamérica [online] - <http://www.nisc.com/factsheets/qila.asp> [Accessed November 2003]
- [41] Latin American Newsletters [online] - <http://www.latinnews.com> [Accessed November 2003]
- [42] Prensa Latina [online] - <http://www.prensa-latina.cu/English/> [Accessed November 2003]
- [43] CANO, 1992-3, *ibid*
- [44] GONCALVES DA SILVA, L.; SILVA FERNANDES, R. La cobertura de las revistas Latinoamericanas por los Servicios de Indización: el caso de las revistas brasileñas. Paper presented at the *Second International Workshop on Scientific Publishing in Latin America*, Guadalajara, Mexico, November 27-30, 1997. [Unpublished]
- [45] OCLC WorldCat [online]: <http://www.oclc.org/worldcat/default.htm> [Accessed 3 January 2006]
- [46] *Clase and Periódica* [online]: <http://www.dgbiblio.unam.mx/> [Accessed 7 May 2006]
- [47] INFOBILA is available, free of charge, directly through the UNAM-CUIB web site [online]: - <http://cuib.laborales.unam.mx> [Accessed 7 August, 2004]
- [49] ALONSO, W.J., and FERNANDEZ-JURICIC, E. Regional network raises profile of local journals. *Nature*, 415, 2002, 471-472

-
- [50] Google Scholar [online] – <http://scholar.google.com/> [Accessed 7 May 2006]
- [51] SCOPUS [online] – <http://www.scopus.com/scopus/home.url> [Accessed 7 May 2006]
- [52] GUIMARAES, J.P. Opportunities and common goals for research in the Americas. *in: Science and technology in the Americas, perspectives on Pan American collaboration, edited by J. Stann.* 1993. Washington, D.C., U.S.A.: American Association for the Advancement of Science. pp. 65-72.
- [53] REI, *Recursos Electrónicos de Información* [online]: <http://aps.unirioja.es/biblio/recursos?sub=1> [Accessed 3 June 2006]
- [54] CrossRef [online]: <http://www.crossref.org/> [Accessed 3 January 2006]
- [55] Findability.org [online]: http://www.findability.org/archives/cat_findability.php [Accessed 12 January 2007]