

SCHOLARLY COMMUNICATION STRATEGIES IN LATIN AMERICA'S RESEARCH-INTENSIVE UNIVERSITIES

ESTRATEGIAS DE COMUNICACIÓN ACADÉMICA EN UNIVERSIDADES DE INVESTIGACIÓN INTENSIVA DE AMÉRICA LATINA

ESTRATÉGIAS ACADÊMICAS DE COMUNICAÇÃO NAS PESQUISAS INTENSIVAS DAS UNIVERSIDADES DA AMÉRICA LATINA

**Juan Pablo Alperin
Gustavo E. Fischman
John Willinsky**

ABSTRACT

Universities engaged in producing high quality research have been in existence for centuries in Latin America, but only in the last two decades has the research-intensive model become the standard to be achieved by most public universities in the region. The increased emphasis on scholarly publication in the region has coincided with the rise of the Internet and with the emergence and growth of the Open Access (OA) movement. It is in this context, one in which OA already forms a significant part, that we explore three main issues: First, how OA has been understood and incorporated into the publishing practices of faculty in research-intensive universities; Second how OA has been understood and incorporated into the assessment practices of the national systems of Research and Development (R&D); and third, how can we understand the dynamics of convergence between the growth of research and growth of OA in the region. We will explore these three issues primarily through the analysis of the two dominant OA scientific portals in the region—SciELO and RedALyC. We find that the inclusion of SciELO and RedALyC in the evaluation systems of the research-intensive university and of R&D national systems has given prominence to OA in the region and that this has, in turn, given credence to the evaluation practices of such OA initiatives. While it is impossible to determine direct causation between these OA initiatives (and associated technologies) on the quantity and quality of Latin American research, we conclude that they have been a crucial mechanism of support for researchers, universities, and for national systems of innovation.

Keywords: Latin America, Scholarly communication, Open Access

RESUMEN

Las universidades dedicadas a producir investigación de alta calidad han existido por siglos en América Latina, pero solamente en las últimas dos décadas el modelo de investigación intensiva se ha convertido en el estándar para la mayoría de las universidades públicas de la región. El creciente énfasis en la publicación académica en la región ha coincidido con el adelanto del internet y con el surgimiento y crecimiento del movimiento de acceso abierto (OA, por su sigla en inglés). Es en este contexto, del cual el OA ya forma parte importante, que nosotros exploramos tres asuntos principales: Primero, cómo el OA se ha entendido e incorporado a las prácticas de publicación de los profesores en universidades de investigación intensiva; segundo, cómo el OA se ha entendido e incorporado a las prácticas de los sistemas nacionales de investigación y desarrollo (I&D); y tercero, cómo podemos entender las dinámicas de convergencia entre el crecimiento de la investigación y el crecimiento del OA en la región. Exploraremos estos asuntos básicamente a través del análisis de los dos portales científicos dominantes de OA en la región—SciELO y RedALyC. Encontramos que la inclusión de SciELO y RedALyC en los sistemas de evaluación de las universidades de investigación intensiva y los sistemas nacionales de I&D han dado predominancia al OA en la región y que, a su vez, se les ha dado peso en las prácticas de evaluación de tales iniciativas de OA. Mientras que es imposible determinar la relación directa entre estas iniciativas de OA (y las tecnologías asociadas) sobre la cantidad y la calidad de la investigación en América Latina, nosotros concluimos que ellos han sido un mecanismo de apoyo para los investigadores, las universidades, y los sistemas nacionales de innovación.

Palabras Clave: América Latina, Comunicación Académica, Acceso Abierto

RESUMO

Universidades destinadas à produção de pesquisas de alta qualidade têm existido há séculos na América Latina, mas apenas nas últimas duas décadas as formas de pesquisas intensivas têm se tornado um padrão a ser alcançado por mais universidades públicas da região. A amplitude da ênfase nas publicações escolares na região coincidiu com a popularização da Internet, com a emergência e crescimento do Acesso Aberto (AA). Neste contexto, um dos quais o AA é parte integrante, nós exploramos três principais aplicações: Primeiro, o quanto o AA tem sido compreendido e incorporado nas publicações da faculdade nas pesquisas intensivas de universidades; Segundo, o quanto o AA tem sido compreendido e incorporado nas práticas de avaliação do sistema nacional de Pesquisa e Desenvolvimento (Research and Development - R&D); e terceiro, como podemos entender a dinâmica de convergência entre o crescimento da pesquisa e o crescimento do AA na região. Vamos explorar estas três questões principalmente através da análise das duas dominantes AA de portais científicos na região — SciELO e RedALeC. Ahamos que a inclusão de SciELO e RedALeC nos sistemas de avaliação da universidade de pesquisa intensiva e os sistemas nacionais R&D têm dado destaque ao AA na região e que este, por sua vez, têm dado crédito às práticas de avaliação de tais iniciativas AA. Por enquanto é impossível determinar a causa direta entre as iniciativas AA (e associações tecnológicas) na quantidade e na qualidade das pesquisas na América

Latina, nós concluímos que isto tem sido um mecanismo crucial de suporte à pesquisa, universidades e ao sistema nacional de inovação.

Palavras-chaves: América Latina, Comunicação Escolar, Acesso Aberto.

Introduction

Open Access—scholarship that is “digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber, 2011)—has dramatically changed the research landscape in universities worldwide in the twenty-first century.¹ In Latin America, regional Open Access initiatives (if not officially labeled “open access”) have permeated most research-intensive universities and national science evaluation systems and have begun to alter the way that local research is perceived. Furthermore, the prominence of Open Access, regionally and globally, has become a significant force in transforming previous traditions and systems used by universities in Latin America in the production and access to scientific knowledge, having a profound influence on its position within what might be thought of as the global knowledge exchange.

What has become clear is that Latin American journals are using the open access publishing model to a far greater extent than other regions arising out of both the sense of public mission among the Latin American University (LAU)² and open access’s effectiveness for sharing knowledge, and there is reason to believe that this is contributing to an increased presence and impact for this literature. As well, journals in this region are increasingly turning to large-scale non-commercial open access publishing portals to build the reputation of journals that meet accepted “international” editorial standards. And thirdly, journals in the region are employing open source software solutions, principally Open Journal Systems, to manage their publishing processes online. These current initiatives speak encouragingly to the region’s growing contribution to a global knowledge exchange and to the research literature’s standing as a public good. At the same time, this assessment of scholarly publishing in Latin America suggests that

¹ Peter Suber (2011), one of the most prominent Open Access advocates, provides a terrific overview of Open Access, including a timeline, overview, and the concise definition presented here. See also for a broad overview on Open Access, Willinsky (2006).

² Given the great diversity in the Latin American higher education landscape, the term “Latin American University” as used here is not intended to encompass all Latin American institutions. Rather, it is intended to represent the institutions that are providing a model for the rest (see Bernasconi, 2007).

further advances could be achieved through increased coordination, technical efficiencies, and editorial support in the integration of these initiatives.

The Budapest Open Access Initiative (BOAI), drafted in a meeting organized by the Open Society Institute in December of 2001, gave this emergent movement its name Open Access (OA) and some definitions of what that meant. The initiative begins by noting that OA is made possible by the convergence of “an old tradition and a new technology ... The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet.” (“Budapest Open Access Initiative,” 2002; opening paragraph). In Latin America, the broad embrace of OA was entirely consistent, in a very timely way, with the latest of many transformations to the higher education system in the last decades.

The transformations explored by many of the authors (Bernasconi, 2007; Didriksson, 2007; Gentili & Levy, 2005; Malagón Plata, 2008; López Segreña, 2007; Fischman, 2008; just to name a few) include: expanded enrolments; consolidation of the private sector (in some countries the largest provider of higher education services); acceptance of social sectors previously excluded from the universities; expansion of fields of study; expansion of graduate programs (MAs, MBAs, and PhDs); implementation of accreditation and national evaluation practices; incorporation of new forms of delivery of classes (TV, hybrid, online); and great expansion in the use of computers. These transformations were spurred on by a blend of local and global demands, needs, and environments, with this latest set of developments reflecting the impact of the digital era on scholarly communication, especially as digital technologies enable significantly greater levels of participation and distribution in this communication (Babini & Fraga, 2006; Fischman, Alperin, & Willinsky, 2010; Holdom, 2005; Terra-Figari, 2007).

Collectively, these transformations have presented a serious challenge to a model of university that focused on professional preparation and “state-building” (Ordorika & Pusser, 2007), where research was done by a small group of scholars often located in the

most prestigious institutions and centers (Balan, 2007; Malagón Plata, 2005).³ In response to those challenges, many institutions are adopting a more “research intensive” model.⁴ Two global trends in particular are entangled with the transformations themselves, leading to the of the research intensiveness (Bernasconi, 2007). The first is a complex combination of economic conditions, state budget limitations, and massive expansion of enrolments coupled with the rapid expansion of the private sector that have undercut the prominent role of the national universities, making questions about access to, and the quality of, higher education more complex than ever. The second is the worldwide rise of the U.S. idea of a research university, which has gained ascendancy as the model to follow (Bernasconi, 2007). A third trend, intricately tied to the previous two, is the emphasis on developing alternative sources of funding for higher education, as well as the increasing social demands for universities to contribute to social and economic development (Arocena & Sutz; 2001; Thorn & Soo, 2006; p3).⁵ The three trends all lead to increased importance of “research activities” among most universities in the region, including its incursion into institutions not typically associated with scientific research.

The open access movement has complemented these transformations and global trends. In one sense, OA could not appear in Latin America without the increasing role of research in the LAU. After all, OA cannot exist without a body of literature that can be opened. But in another sense, OA is a significant player in shaping the research landscape and it is OA and OA initiatives that drive some of the transformations. This paper seeks to document some of these initiatives and how they are affecting the evaluation of research, the definition of editorial quality, and the organization of the research itself in the digital era. We begin, however, with a brief exploration of the changing role of research in the LAU landscape.

³ Ordorika and Pusser (2007) note that institutions like the Universidade de São Paulo, Universidad Nacional Autónoma de México (UNAM) and the Universidad de Buenos Aires can be considered “state-building universities,” responsible in large part for “building the material conditions for the expansion and consolidation of their respective States, as well as the intellectual and social legitimacy of those states” (192)

⁴ While the word model has multiple meanings, in this context “model” primarily refers to the definition that pertains to the idea of an “example to follow”

⁵ The increased emphasis worldwide to connect research carried out at universities with the external world, and in particular with the economy, is often referred to as the *third mission*.

Research in the New LAU Landscape

Access to research is bound to play a pivotal role in the very possibility of a research-focused university landscape. The shift towards the research and entrepreneurial university was facilitated, at many points, by the rise of the Internet and the first experiments in electronic publishing, both of which are integral parts of the OA movement, research dissemination, and scholarly communication today. However, whether freely disseminated or not, research was circulating much more widely via the Web, with increasing emphasis on the bibliometrics of citation rates and impact factors (De Bellis, 2009) as a result of publishing becoming the defining aspect of an institution's reputation. As a result, LAUs are driven by a growing awareness of their research output, fuelled through their own imperative or through national policies.

A further reflection of this greater focus on research and knowledge-production is found in the increase in post-graduate degrees awarded in the region. Aupetit (2007) reports an increase in the number of doctoral degrees awarded in Latin America and the Caribbean as 298% between 1993 and 2003, although the figure drops to 181% if one takes Brazil out of the equation, while Master's degrees increase threefold (RICYT, 2010). Brazil leads Latin America in with over 50% of researchers (both in Universities and at research centers) holding doctorate degrees, but other countries such as Argentina, Colombia, Ecuador, and Uruguay have between 10–25% of their researchers with doctorate degrees (Aupetit, 2007).

The increase in researcher preparation, as a result of the increase of post-graduate programs, has also been supported at the national level in many countries. From the 1980s onward, Latin America enacted policies to professionalize the research career, as another in the moves toward a global alignment within higher education. The *National System of Researchers* in Mexico was established in 1983 as a way of providing incentives and rewards for carrying on research activities within the scope of academic careers. Other countries followed suit, such as the Venezuela with the *Program for the Promotion of the Researcher* and Argentina's *Researcher Career program* through the national science council.

The establishment and management of such programs required a means through which to encourage, measure, and reward research output. Most countries seemed to have

opted, at least in this initial phase, for rewarding the production of those who were able to demonstrate their participation in already established research elites, as indicated by collaboration with research institutions or through publication in the highest ranked journals of the global North. In their earlier iterations, research-promotion programs relied on existing “gold standards,” such as the Science Citation Index (SCI), that provides a limited list of ranked publications.⁶ This reliance on American and European measures ensured that only a very small number of scholars were recognized, with no middle ground or clear ladder of development within the region. This reliance also ensured that certain disciplines, such as the medical sciences, were rewarded since publishing in international journals was already an existing practice, at least for the top researchers in the region. A collateral result, however, was that foreign (and mostly English-language) journals were recognized as the place of “real” scholarship, which contributed little if anything to the growth and development of scholarly communication and publishing within the region.

Even today, and certainly more so the case earlier, the SCI has very few Latin American journals⁷ and is comprised in large part of English-language publications.⁸ McVeigh (2004) reported that of the 239 OA journals indexed by the ISI in 2003, 33 were from South and Central America, compared to 58 for North America and 45 for Western Europe. The percentage shares of OA of all indexed journals for the same regions were 42,3 %, 1,5 % and 1,1 % respectively, clear evidence of how fast established high quality Latin American journals had made their e-versions openly available. A recent study by Chinchilla-Rodriguez & Moya Anegon (2010) has shown that of all the roughly 15000 peer reviewed journals indexed in 2010 in the Scopus database, the proportions that were OA were 73,9 % for Latin America, 4,9 % for North America and 6,9 % for Europe respectively. As we come back to later, OA has caused an important shift away from the use of databases such as SCI and Scopus as a measure of

⁶ Science Citation Index forms part of the ISI Web of Science, owned by Thompson Reuters, which indexes and collects citations from a selective list of approximately 8,000 journals across all disciplines

⁷ Red de Indicadores de Ciencia y Tecnología -Iberoamericana e Interamericana (RICYT) reports that LAC makes up 4.27% of papers cited in SCI for 2008 (RICYT, 2010), despite LAC making up a much larger portion of the world population.

⁸ As a point of comparison, Canada (a country of just over 30 million) comprises 4.25% of the 2008 citations in SCI. The United States of America, not surprisingly, comprises a much larger proportion with 28.84% of all citations in SCI in 2008 (RICYT, 2010).

scientific output, but we cannot ignore the fact that journals indexed in SCI are still amongst the most highly rewarded mediums for disseminating research. These have traditionally been the most highly cited journals, so this recognition is not unwarranted, but SCI was a late print phenomenon in a world that is now entering a digital era, in which new approaches are bound to flourish, before new standards take shape. In the meantime, the use of SCI bibliometrics as the sole measure of research quality has pervaded the evaluations systems of both Latin American national science councils and Latin American universities, and done so on the very eve of the eclipse of the print-journal culture out of which it arose.

Thus the importance of attending to how these systems of evaluations have become significantly more complex, as national science councils and universities attempt to codify traditional evaluation mechanisms in the midst of radical digital-era changes in scholarly communication. One result of this approach is that the same criteria is used to evaluate all scientists and scholars across all fields, even as SCI and related measures have never provided equal coverage of disciplines and regions.

In many cases, countries opted for generating lists of places where publishing was considered more desirable—a practice that continues today. Argentina’s national science council, for example, evaluates Argentinian journals for inclusion into a list of what is considered a “core” national journal.⁹ The list is currently comprised of 138 journals, with 88 titles from the Social Sciences and Humanities, 22 from the Natural and Exact Sciences, and 6 from Engineering, Agricultural, and Material Sciences.

In other cases, national science councils opt for classifying all journals based on editorial criteria such as the use of external peer reviewers, the number of subscribers, and percentage of original research published. Colombia, one of several countries with an elaborate evaluation system, classifies journals under an A1, A2, B, or C scheme.¹⁰ These journal classifications are subsequently used in faculty and researcher evaluations, under the auspices of the research incentive programs described above.

⁹ The requirements for classifying as a core journal can be found at: <http://www.caicyt.gov.ar/nucleo-basico-de-revistas-cientificas/requisitos>

¹⁰ Details of the classification criteria can be found at <http://scienti.colciencias.gov.co:8084/publindex/docs/informacionCompleta.pdf>

The difference between an “A” (top-tier) and a “B” (second-tier) journal in many cases depends on the so-called “international” quality of the journal, largely referring to whether it is English-language or not (Lillis & Curry, 2010). In Colombia, and probably elsewhere, the classifications do not accurately reflect the international visibility and usage (Romero-Torres, Tejada & Acosta, 2010). Yet, such definitions have been in place for several years have been largely institutionalized, but not completely entrenched.

Recently, the Venezuelan *Program for the Promotion of the Researcher*, organized by the Venezuelan National Science Council changed to favour scholars who publish in Latin American journals. Until 2002, this program gave the highest recognition and rewards for publishing in journals indexed by SCI. However, since 2003, articles published in certain regional OA portals qualify for the top recognition. This change resulted in the rise of the number of researchers that qualify for the program and in an increased recognition for set of journals, including national social science and humanities titles, that goes well beyond those included in SCI (Marcano & Phélan, 2009).

The standards by which journals are judged “international”, and thus of higher quality than national or regional, are at play with scholarship’s assumed universality in its methods, practices, and norms. The burden of these distinctions is palpable among researchers and scholars in the region. In a previous study, we found that the debate around what constitutes scholarship/science was often heated and especially pitted those from the arts, social sciences, and humanities against those in the natural sciences, around issues of, for example, the language of communication, between the sciences’ preference for English (that is, “international”) or the others use of Spanish or Portuguese (that is, “regional”) (Fischman et al., 2010). In Fischman et al. (2010), we also warn of the dangers that this creates by fomenting a particular style of journals—those that are most like other journals already indexed in the SCI.

One of the dangers of focusing attention to such journals is that only “generic” or “colonized” journals will emerge from the region. Furthermore, the academic community has a disincentive to submit, peer-review, or form part of the editorial board of journals that do not belong to accepted lists or are not considered “international.” Yet, the research community is far better served by having a wide range of journals operating at different levels of scholarly competitiveness, so that researchers have opportunities (a) to publish

while they are still learning the ropes, (b) to climb the ranking ladder, rather than having to make the leap to top-ranked journals in a single bound, and (c) to participate in peer-review and editorial processes that also help to forge a research culture.

The risks involved in not building up this range and depth of journals have been noted within Latin American academic community. As LAUs transform into research-intensive institutions, a number of OA initiatives have accompanied the changes and provided new ways—and new outlets—for disseminating Latin American scholarship. The next section outlines some of the most important initiatives, which leads to the role that these initiatives have played during the transformation of the LAU.

Open Access Initiatives

One of the responses to many of the issues outlined above, and with funding from the Panamerican Health Organization and the Science Foundation of the State of Sao Paulo in Brazil, was the launching of the Scientific Electronic Library Online (SciELO) in 1997.¹¹ SciELO began as a purely Brazilian initiative for journals from the medical sciences. Since then, SciELO has come to provide a portal with free full-text online access to 817 journals. More than providing access to these journals, SciELO enabled for the first time, information about citations to Latin American publications that are not part of SCI.

In many ways, SciELO quickly became Latin America's very own version of a SCI, with all its virtues and weaknesses. In its original iterations, SciELO only admitted journals from the medical sciences and later other sciences, such as physics, chemistry and mathematics leading to much resentment from those in other disciplines for propagating the notion that the scholarship produced by sociologists, psychologist, or anthropologist and those working within the so-called *soft sciences* were not *real* scientists. One of the responses to SciELO's disciplinary focus, was the formation in 2002 of the Red de Revistas Científicas de América Latina y el Caribe, España y Portugal (RedALyC).¹² At its outset RedALyC was focused entirely on the social sciences. As both portals grew and began to indirectly compete with one another—over which one would be considered Latin America's repository of top-tier journals—both removed their

¹¹ The regional SciELO site and links to country-specific sites can be found at: <http://scielo.org>

¹² The RedALyC portal can be found at: <http://redalyc.org>

disciplinary restrictions (although evidence in RedALyc's historical focus are still evident, with 532 of the current 758 journals in the social sciences and humanities).

What is interesting to note, however, is that neither of these initiatives was borne out of the Open Access movement per se, although both portals provided, from the onset, free and unrestricted access to their content. The compliance with the OA definition was not done as part of a philosophical imperative, but rather out of the overriding objective of providing visibility to the research produced regionally. In fact, the open access movement in Latin America has been widely embraced, but with little conscience of its existence (Alperin, Fischman, & Willinsky, 2008; Villanueva, 2006; Merelo, 2010). With global participation in Open Access running at somewhat over 20% of the research literature (Björk B-C et al. 2010), it seems clear that LAU are utilizing this model to a far greater extent, judging by the two principal portals and the work cited earlier of Chinchilla-Rodriguez & Moya Anegon (2010). Given that OA became the prevalent mode of publication without conscious alignment with the OA movement, one must be cautious when asking questions regarding the role of open access on the LAU and on Latin American scholarship.

In the following section we provide some insight on the role of that OA has played in the region, which, in large part, is the role of these two OA initiatives. The boundary of what can be attributed to OA as a movement versus what can be attributed to OA initiatives is not clear. As the strongest leaders of OA in the region, SciELO and RedALyC are intricately tied to the movement, despite being conceived in parallel. There are, of course, other portals, initiatives, journals, and policies that can and should be noted. Among them, the UNESCO World Social Science Report 2010 specifically mentions the digital library project of the Consejo Latinoamericano de Ciencia Sociales (CLACSO)¹³ and African Journals Online (AJOL)¹⁴, as well as the two aforementioned projects. All four instances, three in Latin America and one in Africa, are examples of wide scale provision of digital content generated within the region as a way of increasing the visibility of local research through the benefits of economies of scale. We would add to the list the numerous institutional journal portals at universities such as the

¹³ <http://www.clacso.org.ar>

¹⁴ <http://ajol.info>

Universidad Nacional Autónoma de México, the Universidad Nacional de Colombia, Universidade Federal do Rio Grande do Sul (Brazil), and the Universidad Nacional de La Plata (Argentina).¹⁵ Regardless of any of these projects' explicit alignment with the OA movement, their inception and insertion into the institutions that govern Latin American scholarship has had profound effects on both the output and consumption of Latin American research.

Open Access and Evaluating Research

Among the most prominent places where OA has played a role has been in broadening the visibility, recognition, and impact of journals published in Latin America. As SciELO and RedALyC gained in numbers and spread across the region, they began to garner the critical mass necessary for drawing regional and international attention. The linear growth of RedALyC and SciELO titles has persisted over time and shows no immediate sign of saturation (

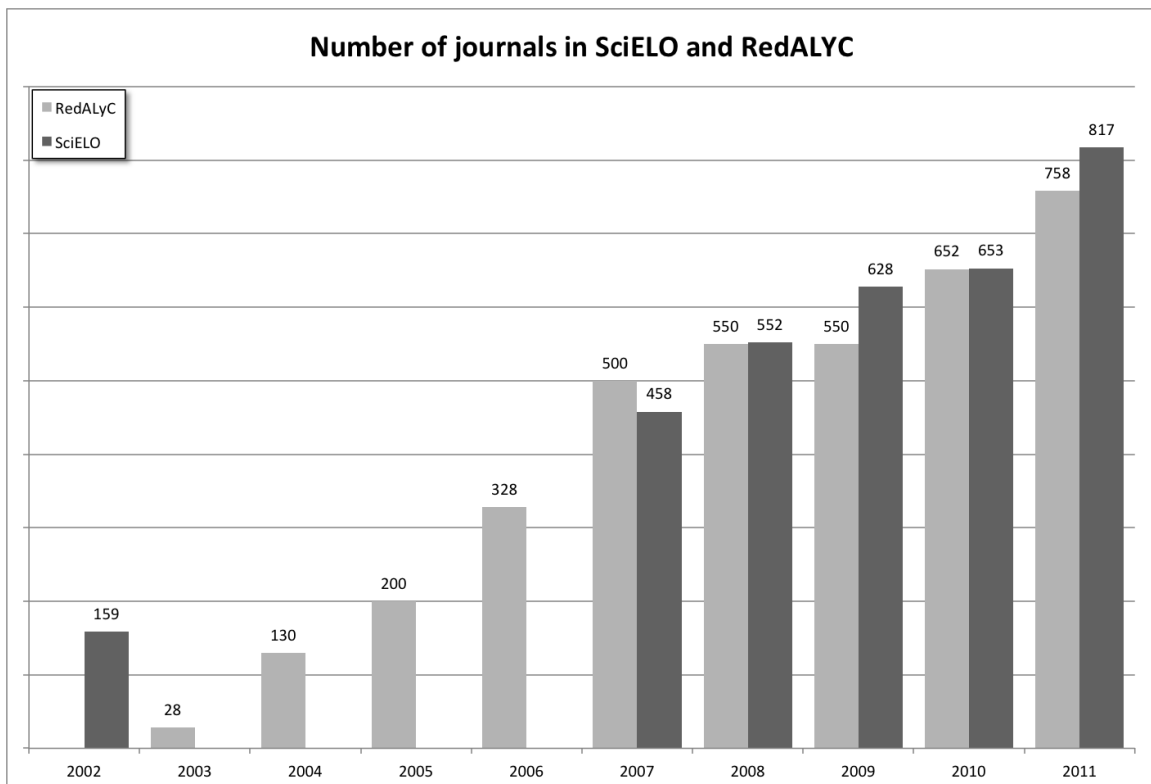


Figure 1). In the first months of 2011, RedALyC received 8.5% of discernible visits from

¹⁵ Respectively, these four portals can be found at <http://journals.unam.mx/>, <http://revistas.unal.edu.co/>, <http://seer.ufrgs.br/>, and <http://www.revistas.unlp.edu.ar/>. Such portals are too numerous to list here.

the United States and over 15% from outside Latin America, the Caribbean, Spain and Portugal.¹⁶ The attention and prestige associated with the portals themselves gets ascribed to its journals, and literally connects Latin America to the global community. If by no other measure, the critical mass of journals at scielo.org and redalyc.org ensures higher search engine ranking (in Google, Google Scholar, Bing, Yahoo, etc) for all of the journals.¹⁷ This affords them the designation of “international” within Latin America when it comes to government endorsement of journal publications.

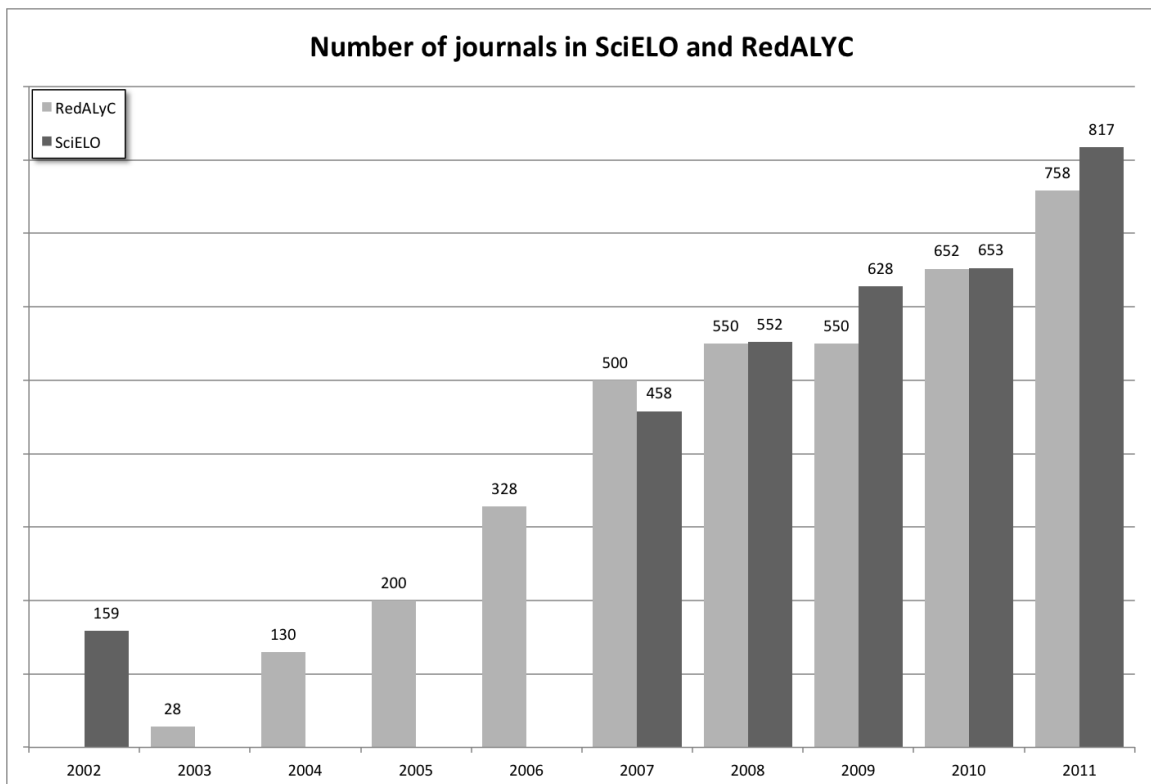


Figure 1 Number of Journals in RedALyC and SciELO since 2002 (Source: <http://archive.org> snapshots of <http://www.scielo.org> and <http://www.redalyc.org>, not all years available)

The higher visibility achieved both in the real and virtual worlds have become, at least in some instances, valid measures of internationality, as seen by their inclusion in some national evaluations in the region (Marcano & Phelan, 2009). As the visibility of

¹⁶ Usage by country cannot be accurately determined from the statistics provided, as 46% of visits are not geo-located. Details of access by country can be found at http://redalyc.uaemex.mx/redalyc/stats/estUsu/RptGral/Enero-Junio_11_vispai.html

¹⁷ None of the major search engines make their ranking algorithm public, but unofficial page rank calculators such as checkpagerank.net and prchecker.info suggest that both <http://scielo.org> and <http://redalyc.org> are ranked 8/10.

journals in these portals increased, their acceptance as valid measures of “quality”—however that is defined—ensured that the portals played a role in researcher incentive systems. In many instances, the relationship between the core lists and the national science councils is further blurred, as the councils are the same institutions who fund and manage the national SciELO portals. Such arrangements mean that journals have to prove that they are “high quality” to make it into the portal, which only serves to further separate the journals that are in the portal and those that are not on the basis of this ascribed reputation, while doing little to help journals across the board to improve their scholarly quality and processes. An early example of this arrangement was found in the first SciELO site outside of Brazil in Chile (scielo.cl) through the CONICYT, but SciELO sites are also administered or directly funded by the national governments of Argentina (scielo.org.ar), Brazil (scielo.br), Peru (scielo.org.pe), and Venezuela (scielo.ve). Even in places where the science council is not financing or administering the SciELO portals, there have been instances where SciELO is explicitly mentioned in lists of “international” indexes that count towards making a journal part of the core list (i.e., in Colombia).

In Argentina, where the same government agency is in charge of administering the SciELO site and creating a list of core national publications (CAICYT), the relationship is one to one. When a journal is considered of sufficient quality to join the core list of journals, it is allowed to enter the SciELO site. As another example, in Colombia, the SciELO site is administered from within the Universidad Nacional de Colombia, but COLCIENCIAS has included SciELO in its list of acceptable international indexes necessary for a journal to be classified as an “A” journal. The same is true for Venezuela. In fact, Venezuela has also embraced RedALyC as a sufficient measure of quality, coordinating with the RedALyC selection committee so as to have a one-to-one correlation between Venezuelan journals in the RedALyC portal and Venezuelan journals that form part of the national list of top journals.

Their accreditation of OA portals in national systems of evaluation challenge the notion that the best science can be found outside the region. SciELO and RedALyC have already become a credible and local alternative to publishing in the scientific “center.” As Guédon (2010) point out, initiatives like SciELO (and by extension RedALyC) are one

possible way for the boundaries between “center” and “peripheries” of science to be further blurred. However, the degree of success OA in general and these initiatives in particular are having on blurring these boundaries is yet to be determined.

Through the traditional rankings of journals and measuring of citations, namely SCI and more recently Scopus, the evidence suggests that the boundary has not yet been sufficiently blurred. While the number of Latin American articles indexed in SCI has more than doubled between 1997 and 2007 (Albornoz, Matos Macedo & Alfaraz, 2010), authors and articles receive fewer citations than their counterparts from other parts of the world (Meneghini, Packer, & Nassi-Calò, 2008; Hermes-Lima, Santos, Alencastro, Ferreira, 2007). Yet, the aggregation of publications within OA portals such as SciELO and RedALyC permit further analysis that provides an alternate perspective.

There are few such studies, but work by Packer and Meneghini (2007) suggests that as of 2005, 9% of citations in the Brazilian SciELO site were to other Brazilian SciELO journals. The same study shows that over 70% of citations are to journals covered by the SCI, suggesting that the two spheres of science are connected. What the study does not show, however, are the citations going in the other direction (from SCI journals to SciELO journals). A map of those citations, or any alternative measure, would provide a clearer picture of the effect of the OA portals in blurring the boundaries between the centre and periphery mentioned.

We want to make two other related points. First, is that there is evidence to suggest there are those scholars and journals that are purposefully “staying local” with their publications, presumably because their target audience is located nationally (Meneghini, Mugnaini & Packer, 2006). Second, recent work by Babini (2011) suggests that SciELO and (to a lesser extent) RedALyC already reflect the output of the most prominent institutions. As just one example, lists of the 50 institutions with most research and most visibility from the Scopus-SCImago and SciELO databases coincide on 36 institutions (Babini, 2011). The implication is that the SciELO database is capturing a segment of the research output that compliments that in so-called “international” databases.

Yet, a definitive picture of the degree to which OA and OA initiatives have opened Latin America literature to the rest of the world and vice versa remains elusive. What is clear, however, is that these OA initiatives are leading to a levelling of the publishing

playing field, with new OA titles turning up among the search results with scholarship published in the traditional “high-prestige” channels, such as the journals in the SCI. Furthermore, the portals themselves have been incorporated into national and institutional evaluation systems and, as a direct consequence, have allowed the initiatives themselves to play a role in the definition of editorial quality. The following section examines this role.

Defining Editorial Standards for Platform Admission

The legitimacy afforded by national and institutional evaluation systems allowed the major OA initiatives to become synonymous with high editorial standards. They were not incorporated into the systems of evaluation by sheer existence or size, but rather, by imposing certain standards around editorial quality. These standards have come, over time, to define the editorial characteristics of a quality scholarly journal. The oldest regional initiative related to the quality of scientific publications in Latin America, the Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal (Latindex), set out a list of criteria to be used for entering their catalogue as early as 1997. The list now contains over 30 criteria such as using peer review, having an ISSN, displaying an editorial board. The two main portals discussed so far, SciELO and RedALyC, have both adopted similar criteria as the requirements for inclusion.

The three lists have converged, with eleven common to all three lists and eight common to at least two (Table 1). In effect, these three initiatives have created a standard set of editorial criteria that all academic journals can look-up to and strive towards. These three sets of editorial criteria and the inclusion of one or more of the portals into national systems of evaluation, appears as an emerging trend, signalling the characteristics of what is considered a “high quality” Latin American publication.

The criteria can be generally grouped into three categories: those aimed at increasing internationality, those aimed at ensuring quality, and those aimed at improving metadata/indexing. The adoption, or even consideration, of these criteria as a standard set has implications for the research that is subsequently produced and valued. For example, the requirement to publish abstracts and keywords in multiple languages (with English

explicitly mentioned in SciELO and RedALyC's lists), suggests that high-quality research must be discoverable and, presumably, used outside of Latin America. Similarly, the requirements for international authors and editorial board indicate that research 'should' influence and be influenced from beyond the local context. Such criteria value the global circulation of scientific knowledge, in spite of certain journals specifically targeting local audiences (Meneghini et al., 2006).

Of those criteria for improving quality, perhaps the most important is the need for peer review. Peer review is widely considered the cornerstone of editorial quality, but it is surprising how many journals in the region still lack a well-defined editorial workflow with peer review by those outside of the journal's own editorial board. During our own experience conducting workshops in 11 Spanish-speaking Latin American countries¹⁸, we anecdotally found that there is still a poor understanding of how peer review should be conducted. The OA initiatives have brought peer-review to the forefront of conversations between editors and those doing journal quality assessments, by making the requirement explicit and through workshops on editorial practices.¹⁹

Other criteria are aimed at organizing the journals' metadata and increasing their visibility through improved indexing. In this category are the requirements to list article metadata on each page, listing author names clearly, listing of editorial teams, and other journal information. This point, seemingly trivial, can improve a journal's visibility in remarkable ways. The following section discusses the way in which these OA initiatives have played a role improving the organization and indexing of Latin American scholarship, thus facilitating the flow of knowledge.

¹⁸ Details of the workshop countries, content, and participants can be found in Fischman et al. (2010) and at <http://pkp.sfu.ca/español>

¹⁹ In the last 4 years, RedALyC has held two international conferences with a workshop component for journal editors. Details of the second meeting can be found at: <http://www.redalyc.org/congresoeditores2010/bienvenida2.jsp>. Latindex and the International Network for Scientific Publications (INASP) have partnered to provide workshops for editors and have held numerous workshops in Argentina, Bolivia, Mexico, Costa Rica, and Nicaragua. For more information see: <http://www.inasp.info/file/10d4c8cde6d0034725cf0be35b0b176b/latindex.html>

Table 1. Entrance requirements for Latindex, SciELO and RedALyC

| Requirement | Latindex* | SciELO** | RedALyC*** |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| mentions editorial team | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| has a minimum number of original research articles | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| author names and affiliations are clearly labeled | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| adherence to publishing schedule | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays a table of contents | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| has and displays ISSN | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays submission and acceptance dates | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays abstracts in English ^a | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays keywords in English ^a | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| peer-review with at least two external reviewers | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| indicates a citation style | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| has and displays a publishing entity and location | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays article metadata at the beginning of article | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| has defined focus and scope or objectives | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| forms part of any indexing system | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| requests declaration of originality | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| displays URL on homepage (electronic only) | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> |
| has minimum percentage of external authors | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> |
| has minimum percentage of external editorial board | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> |
| provides access to archives | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> |
| has existed for a minimum period of time | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| displays name of director/manager of journal | <input checked="" type="checkbox"/> | | |
| display publishing schedule | <input checked="" type="checkbox"/> | | |
| mentions editorial board | <input checked="" type="checkbox"/> | | |
| displays copyright policies | | <input checked="" type="checkbox"/> | |
| minimum publishing schedule | | | <input checked="" type="checkbox"/> |
| publishes a minimum number of articles per year | | | <input checked="" type="checkbox"/> |

* This list is a combination of the requirements for print journals and for electronic journals wishing to enter the Latindex Catalogue. Some of the parameters are omitted from this list, while others were merged into a single line item. Details can be found at <http://www.latindex.org/latindex/catalogo.html>

** Journals wishing to enter RedALyC do not need to meet all of these criteria. Some criteria are strictly mandatory while others are specified on the basis of “x number from this sub-list.” Many of these line items are a combination of multiple requirements. Details can be found at <http://redalyc.uaemex.mx/redalyc/media/principal/auxHemeroteca/criterios.html>

*** Each country is free to specify its own criteria for entering SciELO. This list was taken from the SciELO Chile site. While the criteria for other SciELO sites is similar, it can vary on specific points from the selection shown here. Details can be found at http://www.scielo.cl/sr_scielo/CriteriosObligatoriosSciELO.pdf

^a Latindex does not explicitly specify English as a second language

NB1: For the purposes of simplicity, this lists only the major requirements specified by all three portals, but purposely leaves out some minor requirements present in only one of the three lists.

NB2: The requirements have not been literally translated in order to provide the commonality between the three separately worded lists.

Digital Organization

Beyond setting a standard for journal characteristics, the three portals have also advanced the normalization and organization of metadata. In a highly digital publishing environment, the importance of organizing article and journal information is essential for a journal to participate in the electronic data exchange and to be indexed by search engines and scholarly databases alike. The criteria, as well as the portals themselves, have improved the electronic access to Latin American publications.

In a previous section, we argued that the OA initiatives have given greater visibility to Latin American scholarship—at least in principle. By organizing the journal’s metadata and displaying it on their portals for search engines to index and for scholars to search, all three major initiatives have increased the potential “publicness” of hundreds of journals. The result is that a large portion of Latin American scholarship is currently in machine-discoverable format for a global public where it was not before. To their credit, SciELO and RedALyC have transformed the research landscape by facilitating the paper-to-digital transition of the last decade, the effects of which remain to be understood.

However, the portals have not been alone in this regard. The adoption of journal management software and institutional repository software has also played a defining

role. In particular, the growth of self-managed journals using Open Journal Systems (OJS) (an open source journal management and publishing platform)²⁰ and of institutional repositories using, primarily, DSpace has been significant. As of August, 2010, there were 2,245 journals using OJS in Latin America (see Table 2 for details). The growth of institutional repositories is also notable, and while precise counts are not available, the work of Pené (2010) points to their increasing presence.²¹ Furthermore, Brazil put forward a national law (Projeto de lei 1120/2007) requiring that all universities have and receive funding for an institutional repository.²² The use of such software and its widespread adoption, combined with the OA portals, has done much for organizing the digital scholarly production of the region.

The convergence of such Open Source tools and the Open Access movement more broadly might not be fully realized in some realms (Willinsky, 2005), but its convergence cannot be ignored with regards to Open Source software related to academic publishing. Both OJS and DSpace are important such examples. Although not all journals using OJS are OA, a sample of nearly one thousand OJS journal from around the world showed that the software is primarily (83%) used to offer immediate OA to their online content (Edgar & Willinsky, 2010). Similarly, and almost by definition, the vast majority of institutional repositories are OA. Given the close coupling between the software itself and the OA movement more broadly, the increased digital organization of scholarship and its impact on LAU is affected by the Open Source and Open Access movements alike.

Table 2. Number of journals by country currently using Open Journal Systems (August, 2010).

| Country | Journals |
|-----------|----------|
| Argentina | 69 |
| Bolivia | 25 |

²⁰ In the interest of full disclosure, we would like to point out that we are part of the Public Knowledge Project, creator of Open Journal Systems.

²¹ While there are several directories for Institutional Repositories (IR) to register themselves, there seems to be a lack of interest in many institutions to register their repositories, leading to inaccurate counts of IR growth worldwide.

²² The current state of legislation can be found at http://www.camara.gov.br/sileg/Prop_Detalhe.asp?id=352237

| | |
|--------------|--------------|
| Brazil | 1,615 |
| Chile | 36 |
| Colombia | 235 |
| Costa Rica | 11 |
| Cuba | 11 |
| El Salvador | 2 |
| Mexico | 121 |
| Nicaragua | 1 |
| Peru | 3 |
| Puerto Rico | 12 |
| Uruguay | 2 |
| Venezuela | 102 |
| TOTAL | 2,245 |

Conclusions

The combination of OA and its related technologies has played a role in shaping the scholarly communication landscape, especially when considering the expansion and adoption by many universities of more research-intensive university models. In this regard, the convergence of OA, Open Source, and the Internet, has been, as in other contexts, both disruptive and constructive, but showing idiosyncratic Latin American traits.

The OA initiatives and the OA-friendly software have shown this Latin American distinctiveness. The fact that OA emerged in Latin America and that the OA initiatives have become venues of high prestige has placed OA scholarship at the center of the research-intensive LAU. Through the OA initiatives highlighted here, OA scholarship has been shaping what research is evaluated and how. As the OA portals enter the evaluation systems of universities and nations, their evaluation standards are adopted by the research communities. This relationship is, of course, bi-directional. At the same time that the community of scholars takes cues from the portals, the portals adapt their evaluation practices to suit the needs of the community. However, the consolidation that is taking

place would not be possible without the digital organization of Latin American research, to which the portals and software have greatly contributed.

OA and OA initiatives could not have such an impact, were it not for the distinct qualities of the Latin American context in which they have emerged. In this paper, we have chosen to highlight very specific realms in which OA has played a role, but we have observed three other, more general, ways in which OA has affected the LAU.

First and in a very general way, OA has allowed increasingly numbers of Latin American scholars to change their mode and style of participation in accessing as well as producing scholarship that aspires to be both “local & global.” However, while we recognize that OA is not a magic wand that has solved all the scholarly and political challenges involved in making the emerging scholarly production of the LAUs relevant for the local communities and for the international scientific communities, it is also evident that it has created possibilities that were very hard to imagine to faculty working in the LAU of a few decades ago.

Second, it is important to recognize that OA has played a significantly different role among the faculty working in institutions of higher education in Latin America than it has in Anglo-American and many Western European countries. While in the deep-rooted research intensive universities of the “North” OA “disrupted” traditional and large scholarly communities and well-developed models of scientific, production and communication in Latin America OA was also disruptive of the practices and styles of a smaller group of scholars and their networks. Historically the number of LAU scholars participating in the central/global discussions was very low and mostly located in the macro-universities that concentrated the largest number of research intensive units. OA was seen by many of those scholars who were already participants of the central science discussion as a threat to the quality achieved by their centers, but it was also quickly perceived as the most efficient way of strengthening the possibilities of an emerging and larger than ever researcher population.

Third, while the landscape of scholarly communications in Anglo-American and many Western European countries is dominated by commercial publishers, in Latin America the dominant voices are universities and research centers. The region has a very extended tradition of university presses and non-for profit scholarly publications. Given

this landscape, OA and its related technologies were rapidly embraced and had fewer voices opposing their adoption.

Another distinctive characteristic of the LAU is the general social perception that public institutions are the main producers of scientific knowledge in the region coupled with very strong traditions about the “public” role that the LAU needs to perform. With the echoes of the reform of 1918 in Cordoba still heard in the halls of many universities,²³ it is unsurprising that Open Access Latin American journals have been able to flourish in an environment with growing accesses to the Internet and e-science (Plaz Power, 2009). SciELO and RedALyC are two clear manifestations of the strong sense of “publicness” embedded in many of the LAUs. These two institutions have given prominence to OA in the region and this has, in turn, given credence to the evaluation practices of such OA initiatives. Furthermore, the technologies surrounding online publishing have shaped the digital landscape and increased the virtual presence of Latin American research. While it is impossible to determine direct causation between these OA initiatives (and associated technologies) on the quantity and quality of Latin American research, we must conclude that they have been a crucial mechanism of support for researchers, universities, and for national systems of innovation. We draw this conclusion because OA appears to be contributing to the global integration and exchange of Latin America research and scholarship by enabling LA literature to increase its global circulation (compared to print and subscription models) and citations. This, in turn, is freeing up some portion of LA library budgets for purchasing additional non-OA resources. Universities are thus able to support the growth of research workforce by providing a means of launching peer-reviewed journals with global distribution (which subscription journals would not be able to achieve). Finally, the development of portals such as SciELO, RedALyC, and Latindex raised the profile as well as the quality of scholarly journals in Latin America. Even as provisions need to be made for improving and developing the whole range of journals,

²³ As can be seen by the very clear language used by the Declaration of the Regional Conference on Higher Education in Latin America and the Caribbean: “Higher education is a social public good, a universal human right, and a responsibility of States. This is the conviction and the basis for the strategic role that it should play in the processes of sustainable development of the countries of the region” (CRES, 2008).

rather than focusing efforts on an exclusive set of “qualified” titles, we see OA as a critical aspect of the scholarly communication landscape in Latin America.

References

- Alperin, J., Fischman, G., & Willinsky, J. (2008). Open Access and Scholarly Publishing in Latin America: Ten flavours and a few reflections. *Liinc em Revista*, 4.
- Albornoz, M., Matos Macedo M. Y Alfaraz C. (2010) “Latin America”, en L.Brito (director): UNESCO Science Report 2010-the current status of science around the world, UNESCO, p.77-101. Retrieved from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/sc_usr10_la_EN.pdf
- Arocena, R., & Sutz, J. (2001). Changing knowledge production and Latin American universities. *Research Policy*, 30(8), 1221-1234. doi: 10.1016/S0048-7333(00)00143-8.
- Aupetit, S. D. (2007). Assessment of scientific productivity and restructuring of university research systems in Latin America. *Educación Superior y Sociedad*, 12(1), 21-62. Retrieved from <http://ess.iesalc.unesco.org.ve/index.php/ess/article/view/23>.
- Babini, D. (2011). Acceso abierto a la producción científica de América Latina y el Caribe. Identificación de principales instituciones para estrategias de integración regional. *Revista Iberoamericana de Ciencia, Tecnología y Sociedad*, 6(17). Retrieved from: http://www.revistacts.net/files/Volumen%206%20-%20N%C3%BAmero%2017/babini_EDITADO_FINAL.pdf
- Babini, D. & Fraga, J. (Eds.). (2006). *Edición electrónica, bibliotecas virtuales y portales para las ciencias sociales en América Latina y el Caribe*. Buenos Aires: CLACSO. Available from <http://bibliotecavirtual.clacso.org.ar/ar/libros/secret/babini/babini.html>
- De Bellis, N. (2009). *Bibliometrics and Citation Analysis: From the Science Citation Index to Cybermetrics* (Lanham, MD: Scarecrow Press).

- Bernasconi, A. (2007). Is there a Latin American model of the university? *Comparative Education Review*, 75(1) 27-52.
- Björk B-C, Welling P, Laakso M, Majlender P, Hedlund T, et al. (2010). Open Access to the Scientific Journal Literature: Situation 2009. *PLoS ONE* 5(6): e11273. doi:10.1371/journal.pone.0011273
- Budapest Open Access Initiative. 2002. Retrieved from <http://www.soros.org/openaccess/read.shtml>.
- Chinchilla-Rodríguez, Miguel S, & Moya Anegón, (2010) F. Open access and Scopus: a new approach to scientific visibility from the standpoint of access, unpublished working paper Scimago research group, Spain
- Didriksson, A. (2007). Contexto global y regional de la educación superior en América Latina y el Caribe. In *IESALC. Tendencias de la educación superior en América Latina y el Caribe*, (pp. 1–43). Caracas: Instituto Internacional para la Educación Superior en América Latina y el Caribe- UNESCO.
- Edgar, B. D., & Willinsky, J. (2010). A Survey of the Scholarly Journals Using Open Journal Systems. *Scholarly and Research Communication*, 1(2), 1-22.
- Fischman, G. E. (2008). Las universidades públicas en el siglo XXI. Grandes expectativas, algunas promesas y muchas incertidumbres. *Universitas Humanística*, 66(2), 239–270.
- Fischman, G., Alperin, J., & Willinsky, J. (2010). Visibility and Quality in Spanish-Language Latin American Scholarly Publishing. *Information Technology & International Development*, 6(4), 1-21. Retrieved from <http://pkp.sfu.ca/node/3347>.
- Gentili, P., & Levy, B. (2005). *Espacio público y privatización del conocimiento: estudios sobre políticas universitarias en América Latina*. Buenos Aires: CLACSO.
- Guédon, J. C. (2010). Acesso Aberto e divisão entre ciência predominante e ciência periférica. In S. M. Soares Pinto Ferreira & M. das Graças Targino (Eds.), *Desmistificando a acessibilidade e a visibilidade de revistas científicas eletrônicas*. São Paulo: Senac. Retrieved from <http://www.citeulike.org/user/JSicot/article/2073899>.

- Hermes-Lima, M., Santos, N. C. F., Alencastro, A. C. R., & Ferreira, S. T. (2007). Whither Latin America? Trends and challenges of science in Latin America. *IUBMB life*, 59(4-5), 199-210. doi: 10.1080/15216540701258751.
- Hitchcock, Stephen (2011). The effect of open access and downloads ('hits') on citation impact: a bibliography of studies. Open Citation Project. <http://opcit.eprints.org/oacitation-biblio.html>
- Holdom, S. (2005). E-Journal Proliferation in Emerging Economies: The Case of Latin America. *Lit Linguist Computing*, 20, 351-365. doi: 10.1093/lc/fqi033.
- Lillis, T., & Curry, M. J. (2010). Academic Writing in a Global Context: The politics and practices of publishing in English, 224. Routledge. Retrieved from <http://oro.open.ac.uk/17055/>.
- López Segrera, F. (2007). *Educación superior internacional comparada. Escenarios, temas y problemas*. Caracas: IESALC.
- Malagón Plata, L. A. (2005). Cambios y conflictos en los discursos político-pedagógicos sobre la universidad archivos analíticos de políticas educativas. *Education Policy Analysis Archives*, 13(21), Retrieved July 15, 2008, from epaa.asu.edu/ojs/article/view/127
- Marcano, D., & Phélan, M. (2009). Evolución y desarrollo del programa de promoción del investigador en Venezuela. *Interciencia*, 34(1), 17–24. Asociación Interciencia. Retrieved from http://www.scielo.org.ve/scielo.php?pid=S0378-18442009000100005&script=sci_pdf.
- Mc Veigh M. (2004) Open Access Journals in the ISI Citation Databases: Analysis of Impact Factors and Citation Patterns – A Citation study from Thomson Scientific, Thomson Scientific, <http://science.thomsonreuters.com/m/pdfs/openaccesscitations2.pdf>.
- Melero, R. (2010). ¿Hablamos de Open Access?. *Revista española de salud pública*, 44(5), 241-3. Retrieved from <http://scielo.isciii.es/pdf/resp/v84n2/editorial.pdf>.
- Meneghini, R., Mugnaini, R., & Packer, A. L. (2006). International versus national oriented Brazilian scientific journals. A scientometric analysis based on SciELO and JCR-ISI databases. *Scientometrics*, 69, 529-538. Retrieved from <http://dx.doi.org/10.1007/s11192-006-0168-z>.

- Ordorika, I. & Pusser, B. (2007). "La maxima cases de estudios: The Universidad nacional autónoma de México as a State-Building University," in *Research Universities in Asia and Latin America. World Class Worldwide*, ed. Philip Altbach and Jorge Balan (Baltimore: Johns Hopkins University Press 189-215.
- Ordorika, I. (2009). Universidades y globalización: tendencias hegemónicas y construcción de alternativas. *Educación Superior y Sociedad*, 12(1), 175. Retrieved from <http://ess.iesalc.unesco.org.ve/index.php/ess/article/viewArticle/28>.
- Packer, A. L., & Meneghini, R. (2007). Learning to Communicate Science in Developing Countries. *Interciencia*, 32, 643-647. Retrieved from http://www.scielo.org.ve/scielo.php?script=sci_arttext&pid=S0378-18442007000900014&lng=en&nrm=iso&ignore=.html.
- Pené, M. G. (2010), April. *Nuevas estrategias para la gestión de colecciones en bibliotecas universitarias a partir del advenimiento de los repositorios institucionales*. Paper presented at Congreso Internacional de Información 2010, Habana, Cuba. Retrieved from http://www.fuentesmemoria.fahce.unlp.edu.ar/trab_eventos/ev.702/ev.702.pdf
- Plaz Power, I. (2009). El contexto de la ciencia-e en Latinoamérica. Apologías, oportunidades y desafíos. *Educación Superior y Sociedad*, 12(1), 191. Retrieved from <http://ess.iesalc.unesco.org.ve/index.php/ess/article/viewArticle/29>.
- RICYT. (2010). Red de Indicadores de Ciencia y Tecnología -Iberoamericana e Interamericana. Retrieved from <http://ricyt.org/>.
- Romero-Torres, M., M.A. Tejada, and A. Acosta. (2010). Proposal to Classify Latin American Scientific Journals using citation indicators: Case study in Colombia. Available at: <http://arxiv.org/pdf/1101.2711>.
- Suber, P. (2011). Open Access Overview (Definition, Introduction). Retrieved from <http://www.earlham.edu/~peters/fos/overview.htm>
- Terra-Figari, L. (2007). Diseminación del Conocimiento Académico en América Latina. Sonia Romero Gorski, S. (comp.) *Anuario de Antropología Social y Cultural en Uruguay*, Montevideo, Uruguay: Editorial Nordan–Comunidad, 193-207.

- Thorn, K. & Soo, M. (2006). *Latin American universities and the third mission. Trends, challenges and policy options*. Research Working Paper 4002. Washington, DC: World Bank.
- Villanueva, E. (2006). Accidental open access and the hazards involved: Preliminary experiences on Internet-based publishing in a Peruvian university. *First Monday*, 11(6-5). Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1333>.
- Willinsky, J. (2006). *The Access Principle: The Case for Open Access to Research and Scholarship* (Cambridge: MIT Press, 2006).
- Willinsky, J. (2005). The Unacknowledged Convergence of Open Source, Open Access, and Open Science. *First Monday*, 10(8).