

Trends in the Publication of Refereed Journals in Spanish- and Portuguese-Speaking Latin America?

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Introduction

Globalization is transforming the ways people live their lives, communicate with each other, and do business. The revolution of telecommunications, electronics and satellite technologies, for instance, has changed the speed of production, use, and distribution of knowledge, as evidenced by the increased publication of scientific papers and the number of patent applications (World Bank 2002). Knowledge has gained a more relevant role with the emergence of knowledge-based economies. It is seen as critical for sustained economic development and improved living standards. This happens because the comparative advantages between nations are less related to profuse natural resources or inexpensive labor and more from technical innovations and the competitive use of knowledge (Task Force on Higher Education and Society 2000; World Bank 2002).

There are two challenges that mainly developing and transition countries face to reach economic development: sustainability and competitiveness. On the one hand, economies need to foster the capacity to generate and use knowledge in the pursuit of sustainable development and improved living standards, which is not shared equally among nations (World Bank, 2002). On the other hand, those countries must achieve greater economic productivity if they want to be able to compete effectively and not to be excluded from the global arena (Task Force on Higher Education and Society, 2000).

There are important disparities between rich and poor countries in science and technology (S&T) investment and capacity. In 1996, OECD member countries were estimated to account for 85 percent of total

investment in research and development (R&D); China, India, Brazil, and the newly industrialized countries of East Asia contributed 11 percent; and the rest of the world only 4 percent (World Bank 2002). But there has been consensus that governments need to get more involved in stimulating research and development, especially through collaboration between universities and the private sector (Reid 2007). But the disparities are not only related to S&T investment. Regions like Latin America and the Caribbean (LA&C) have also been relegated to the bottom of the global academic/scientific arenas due to other reasons of which communication of research is one of the most challenging. For instance, the lack of English writing skills of scholars from Spanish- and Portuguese speaking countries (Bergeron 1999; Buela-Casal et al. 2006; Steenkist 2008); the monopoly and high cost of subscription to well-reputed refereed journals and bibliographic databases and indexes (Charum et al. 2002; Charum 2004; Cetto and Vessuri 2005; Borrego and Cristobal 2006; Utges 2008; Vessuri et al. 2008); the weakness of regional and university press units to communicate the work of LA&C scholars (Rama 2006; Uribe 2006), and the lack of value given to research produced locally (Meneghini et al. 2006; Utges 2008) are some of the obstacles that have prevented the region from having a greater influence and impact in the region and worldwide.

However, global, regional, national and even institutional reforms and initiatives are changing that panorama of scholarly publication. The open access movement for democratization of knowledge; the development of regional networks, scientific repositories and bibliographic databases and indexes; the status elevation of national agencies specialized in science and technology; the enactment of policies in higher education and in science and technology; and the growth in number and quality scientific and scholarly (refereed) journals are some of those current trends in the region.

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The aim of this article is to describe some of those trends, focusing on the publication of refereed journals in Spanish- and Portuguese-speaking countries to answer the question, how are trends in scientific publication shaping scholarship in the LA&C region?

Importance and Measurement of Journal Publications in LA&C

Communication, essential for scholarship, has traditionally taken place through several channels, including presentations in conferences, preprints, abstracts, books and journals. Scholarly papers published in peer-reviewed or refereed journals have been essential for the dissemination of research results (Borgman 2007). In recent decades, refereed journals have become the preferred means of communication in LA&C academic contexts.

Usually, results of research are measured through number of publications, numbers of citations, and patents. This is a limited method to determine the social impact of research represented by the publications but is one of the few that allows international comparisons. In that order of ideas, the indicator “*number of publications in international databases*” has a highly explanatory level of the contribution to S&T by the countries regarding the scientific mainstream (de Moura Castro et al. 2001; RICYT 2007). Citation indexes are tools to observe trends, emergencies, disappearances, and thematic concentrations or dispersions, providing information for policy making and dissemination among sectors such as the productive (Charum et al. 2002). However, the volume of contributions to specialist publications is a partial and imperfect indicator because it leaves out other products of scientific activity such as textbooks, monographs, and popular introductions (Cetto and Vessuri 2005), as well as the fast growing blogs and electronic repositories. Citations and number of papers only take into account those papers and authors in mainstream journals and bibliographic indexes excluding a vast number of publications that may be contributing to global knowledge but lack the access to renowned publications. In addition, citations and the impact factor (number of times that a journal, paper or author is cited in certain period of time) do not necessarily represent quality. A paper might be highly cited for the opposite

reasons, for instance, to critique its low quality research design.

Overall, indicators highlight the general problem of the shortage of resources, both human and financial, going to S&T in LA&C (Cetto and Vessuri 2005). Western Europe, North America, Japan, and newly industrialized East Asian countries share 84 percent of publications in S&T and 97 percent of patents registered in Europe and the United States (Task Force for Higher Education and Society 2000).

Trends in Publications of Refereed Journals

Currently, science and innovation are more competitive and more cooperative. Globalization increases competition, while the growing complexity must be addressed through team work, coordination, interaction, and the re-utilization of resources. Coverage and scale are achieved less through scaling investment, and more by sharing data, knowledge, and infrastructure, at times in association with competitors (Vessuri et al. 2008). Cooperation can emerge due to the need of access to some particular field or resource, or priorities for the countries of a region. It also includes a multiplicity of levels and actors involved in cooperation: groups or institutions, bilateral and multilateral (international) organizations and funding agencies (Task Force for Higher Education and Society 2000; Cetto and Vessuri 2005). Scientific journals are one of the most important areas where collaboration can take place. They are the platforms to keep up-to-date academic content in constant circulation. They fulfill a double role of certification or scholarly canon and dissemination of knowledge, but there is more. They increase researchers’ prestige and salary, consultancy offers, speaker fees, and invitations to participate in other activities to talk about their intellectual work (Steenkist 2008).

LA&C has taken advantage of possibilities of collaboration at different levels for the development of scientific periodicals, the region as a whole, but also in; individual countries and institutions. They include regional and national bibliographic databases such as Latindex and Publindex (Gomez 1999; Charum 2002; CNIH et al. 2006; Colciencias 2006); open access electronic repositories of scientific journals such as the Scientific Electronic Library Online—SciELO, the Red de Ameri-

ca Latina y el Caribe—RedALyC and the CLACSO Library (Pessanha 1999; Charum et al. 2002; Cetto and Vessuri 2005; Holdom 2005; Mendonza de Araujo et al. 2005; Borrego and Cristobal 2006; Farga Medin et al. 2006; Meneghini et al. 2006; Steenkist 2008; Utges 2008); and some reforms at the national level such as the creation of ministries and departments of S&T, the enactment of S&T and higher education legislation, and the creation of accreditation systems in higher education (Colciencias 2006; RICYT 2007). Under the two following titles, attention will be put to regional and national initiatives.

Regional initiatives

Worldwide, between 1665 (when the first scientific journal was published) and 1960, 50,000 journals that published 500,000 articles every year were created. Scientific societies from industrialized countries created databases to identify the most relevant discoveries and the ways of dissemination with the highest coverage (Charum 2002; CNIH et al. 2006). There are different kinds of bibliographic databases. The simplest ones are *bibliographic directories* that include basic information about journals (such as country, publisher and discipline). The most famous are the ISSN database, the Serials Directory and the Ulrich's International Serial Directory. A second group consists of indexation and abstract services (IAS), which includes information on content. There are sub-categories of IAS that depend on the type of evaluation that is carried out to publications. During the twentieth century, IAS multiplied to the point that there were around 800 in 2004. Explanations given for this include the need to group journals by thematic fields, the emergence of editorial companies, the regional, national and institutional efforts to have databases, and the initiatives of international organizations to meet information needs (CNIH et al. 2006).

At the regional level, the developing of bibliographic databases with quality filters is on its way with initiatives such as SciELO that has established the evaluation criteria for admission and permanence of scientific electronic journals. Even though the concept is old, the initiative for universal and free-of-charge access to information, open access (OA), was created in December 2001 during the Budapest Open Access Initiative.

On the other hand and linked to this movement, there is a norm that defines the architecture to create applications: OpenURL. SciELO puts together both techniques (Farga Medin et al. 2006). As a multinational project, the main base (in Brazil) splits functions with its national parts. It started as an electronic library in 1997 publishing digital versions of a selected collection of Brazilian scientific journals. Soon it expanded to all Latin America and today it is the biggest OA platform hosted in the LA region in a wide array of disciplines but has an emphasis in the social sciences and health disciplines. The SciELO project is an initiative of the Sao Paulo's State Foundation for the Support of Research (FAPESP: Fundação de Amparo à Pesquisa do Estado de São Paulo) and the Center of Information about Health Sciences for Latin America and the Caribbean (BIREME). In addition to 12 Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, México, Peru, Uruguay, and Venezuela) Spain and Portugal have joined the initiative. Since 2002, the project is also supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico—CNPq. Each country joining the SciELO-initiative has Brazilian-based technical support (the maintenance and actualization of programs that make the sites possible, among other aspects, are done by the main platform). However, no SciELO subdivision gets any monetary help from the Brazilian base. In every country journals that want to be part of SciELO need an approval of a national official scientific and technological entity. Generally speaking, these entities are in charge of rating the researchers and their products and rank them according to international standards. The journals that are evaluated by those entities usually want to achieve high distinctions, usually passing through very strict editorial controls. Each country has its own science and technology institute and they work in close alliance with the SciELO managers (Charum et al. 2002; Cetto and Vessuri 2005; Farga Medin et al. 2006; Meneghini et al. 2006; Steenkist 2008; Utges 2008).

The second largest OA repository in Latin America originated in Mexico. The Autonomous University of the State of Mexico RedALyC project started officially in the year 2002. In its first stages it published only journals related to social sciences and humanities. Seeing the great success and rapid growth, by 2006, Re-

dALyC received the first journals on natural and hard sciences. The project was well received and it continued to expand. By June 2007, RedALyC stored 374 specialized journals (291 dedicated to the social sciences and the humanities and 91 to natural sciences) and almost 60,000 articles of all kinds of disciplines. In its main window, the RedALyC web page has more than six hundred-word articles describing the OA movement and explaining its addition to it. In addition, RedALyC seeks to increase the quality of the scientific publication, to give visibility to Latin American qualified scientific production and to impulse a general and equalitarian information society (Steenkist 2008).

Another initiative is the database of the Mexican National Autonomous University—UNAM called Latindex, whose purpose is to create a directory of the journals that have reached high levels of quality in the Latin American region, Spain and Portugal (Charum et al. 2002). Latindex established a set of 33 criteria to evaluate editorial quality, which is done to the last three published issues of a journal. To be included in this catalogue, periodicals should comply with the eight basic characteristics and at least 17 of the other criteria. Many of these criteria are already part of evaluative models such as São Paulo and Colciencias (Colombia) (Borrego and Cristobal 2006). The first of its products, the online Latindex Directory, contains basic information on more than 13,000 scientific or academic journals. Present members of the system are institutions in Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Mexico, Nicaragua, Peru, Portugal, Puerto Rico, Spain, Uruguay, and Venezuela (Cetto and Vessuri 2005).

National Agencies and Experiences

In general, Latin American governments, have created agencies or reinforced the existing ones to promote the development of S&T. In many cases, such as Venezuela and Brazil, they have created Ministries of Science and Technology. Along with the agencies, legislation for science, technology and innovation has been enacted.

In Latin America, national programs have been created to categorize periodicals and evaluate performance of scientists, budgetary cuttings, efforts of edi-

tors to increase the quality of scientific publications, and the growing relevance of secondary publications and information services (Cetto 1999). Many countries have started creating national bibliographic databases. In the 1980s, countries such as Brazil, Mexico, Venezuela, and Colombia developed initiatives to evaluate scientific/academic journals (Gómez 1999). For instance, the Spanish Information and Documentation Center (CINDOC) has a database of Spanish authors that will allow developing bibliometric studies of their publications as well (Charum et al. 2002). Argentina recently started to give concrete steps in order to get publications indexed by CAYCIT, the government agency that also has the responsibility of relationships with Latindex and SciELO (Utges 2008).

The development of the Brazilian scientific and technological infrastructure as well as the training and expansion of the scientific community are recent events when compared with developed nations. For the medical sciences, the turning point in this process was the foundation of the Oswaldo Cruz Institute in the city of Rio de Janeiro in the early 1900s. For decades, this institute was the main Brazilian institution devoted to medical research (Mendonza de Araujo et al. 2005). The program for the development of Scientific Publications of the Ministry of Science and Technology—CNPq-FINEP was created in 1982 with the purpose of assigning resources in a permanent basis, transferring information as part of the science and technology policy that includes financial support, improving tools for dissemination. It is limited to scientific-technical periodicals (Pessanha 1999). There is also the Foundation for Research Development of the State of São Paulo—FAPESP, which was created by mandate of the Political Constitution of that State, and finances scientific publications. SciELO project was created by FAPESP (Nardi 2008). The Brazilian Agency for the Improvement of Higher Education Personnel—CAPES coordinates the Qualis system for the evaluation of periodical publications. It includes a ladder of categories (A, B, and C, being A the highest possible) at national and international levels (Nardi 2008). That system of categories is similar to that of Colombia.

Another one is the Colombian National Bibliographic Index—Publindex that was created in 1996. Publindex evaluates editorial and scientific quality, sta-

bility and visibility of journals. The creation of Publindex has allowed the Permanent Service of Indexation to classify in predetermined dates the scientific and technological journals based of criteria of quality. There are four categories of indexation, A₁, A₂, B, and C and are assigned with a validity of two years so editors must submit the information of new numbers frequently. Editors have submitted their publications responding to formal callings of invitations from Colciencias and the Colombian Institute for the Promotion of Higher Education—ICFES. Information of journals is entered regularly in the database, so that each publication can build its own history within the National System Colombian ST+I Publications (Colciencias 2006).

Conclusion

There is an important growth in quantity and improvement in quality of scientific journals as a response to regional, national and institutional efforts. The movement of publication has enhanced publishing and other processes related to the dissemination of scientific knowledge. This has been helped by the open access movement. Networks of institutions and researchers are being created, giving space also to the region's main languages, Spanish and Portuguese. Though there are some research about this topic and many experts in the field, scientific publication is a fresh and interesting topic to develop scholarship in the LA&C region.

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