
THE IMPACT OF CONTEMPORARY MODES OF PRODUCTION IN UNIVERSITY PRESSES

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Abstract

This article aims at investigating, through a literature analysis, how contemporary modes of production impact university presses considering the social, political and economic contexts. The methodological approach consisted of two stages of data collection from the Web of Science database: in the first stage we retrieved 42 items related to changes in university presses over the last few years. In the second stage we analyzed 62 papers, related to information technology, refined from the concept of Open Access as a socio-technical concept. Five categories were selected for the content analysis of the papers: a) publishing market; b) dynamics of publisher; c) interaction with libraries; d) science communication, e) copyright. As a result, we discuss the advantages and potential of Open Access literature as of 2000, as well as the challenges for ideal, unrestricted and unlimited access to the intellectual production. We argue that further studies should focus on public and private relations, restricted access or Open Access, production resources, market, book prices, relations between publishing houses and other entities, institutions or companies, treatment of copyright, representation of society, committees and editorial boards.

Keywords: University presses; Open Access; Scientific communication; Contemporary modes of production

Resumo

O presente trabalho investiga, por meio de análise de literatura internacional, como os modos de produção contemporâneos repercutem na editoração universitária considerando os contextos sociais, políticos e econômicos. O percurso metodológico abrange duas etapas de coleta de dados a partir da base de dados Web of Science: a primeira retornou 42 artigos referentes às mudanças decorrentes nas editoras universitárias nos últimos anos. A segunda etapa retornou 62 artigos, ligados à tecnologia da informação, refinados a partir do conceito de Open Access como um conceito sociotécnico. Para a análise dos dados elegeu-se cinco categorias, são elas: a) Mercado Editorial; b) Dinâmica das Editoras; c) Interação com as bibliotecas; d) Comunicação Científica, e) Direitos Autorais. Como resultado, apresenta-se a abertura da literatura ao tema Open Access a partir da década de 2000, suas vantagens e virtualidades, quanto os desafios que enfrenta o ideal de acesso irrestrito e ilimitado à produção intelectual. As vertentes indiciárias de estudos futuros estão focadas nas relações entre público e privado, acesso restrito ou aberto, recursos de produção, mercado, preço do livro, relações entre editoras e outras entidades, instituições ou empresas, tratamento dos direitos autorais, representação da sociedade, conselhos e comitês editoriais.

Palavras-chave: Editoras Universitárias; Arquivos abertos; Comunicação científica; Modos de produção contemporâneos

1 Introduction

The contradictions present in the university environment reflect the information policies, particularly the impact of contemporary modes on the production of university presses. Thus, if we accept the assumption that a university press is a publisher “inside” a university, bound by and part of the university’s mission, we are encouraged to question the mission and discuss its editorial policy, particularly when digital technologies and the Open Access movement have been transforming processes, research institutions and scientific communication.

Knowledge is internationally disseminated in a short period of time. New forms of cooperation are stimulated, allowing researchers to be read and acknowledged

thanks to the modes of production that reconfigure the relationship between researchers and publishers at present times. We could ask ourselves at this point where do the researchers and editors work and how the contemporary modes of production impact the university presses.

Based on the categories found in the literature about university presses, the aim is to discuss the modes of publishing production related to the use of digital media technology and its impact on the different proposals of university presses. With the purpose of examining how the dynamics of production and dissemination of scientific information is understood by the university presses, we understand that the vocation of a university is to develop and disseminate knowledge. **We understood university press as a higher education institu-**

tion able for publications previously selected by editorial board.

Society sees the university's vocation as a privileged institution, a factory that produces and disseminates knowledge. It hosts funding agencies, programs, projects and initiatives that place it in the cultural and scientific vanguard of a country. Thus, for a historical argument, the university press plays a significant role because the object it produces is closely related to the academic context to support the development of teaching and research. This process has been happening since the foundation of the first universities, in which the book was the vital instrument of its existence as flourishing institutions.

Similar to those first universities whose evolution took place from the amalgamation of jobs with common proposals for the production and communication of knowledge, at present the dynamics and revolutionary modes of production are used to fulfil the university institutional mission. If, for historical institutions, the comments and discussion of texts were traditionally oral, gradually the bookmakers organized themselves in close dependence with educational activities, organizing the illumination, the author, copyist, the bookseller and the stationer, responsible for the piece, which were sections of the manuscript, the exemplar, of each textbook of theology or liberal arts that the university required. (Labarre, 1981, p. 31).

The cultural level in Europe during the Middle Ages and the effects of the establishment of universities on book production encouraged the practice of scriptoria and activities related to books. As media technology evolved, the ideal for the production of texts increasingly improved thanks to the advances of the contemporary world.

Based on the analysis of Viñao Frago (1998, p. 8), the most useful approach to analyze institutional culture is the "confrontation between theory, legality and practices". Therefore, focusing on university presses and their contribution to the communication of scientific and technological information, the present study concentrated on the modes of knowledge production that have affected their publications.

Accepting the broad meaning of the term publication signifying the concept of production, distribution and circulation of texts, irrespective of the medium, university presses are understood as entities connected to higher education that select, produce and disseminate books, journals and other different types of media. Among these, scientific journals have been extensively published in Brazilian universities, prior to the consolidation of publishing houses. Considered as the "files of science" by constantly recording scientific discoveries, according to Stumpf (1998, p. 4), journals record the memory of new scientific contributions. However, university presses are not always responsible for these

vehicles, though they are essential for scientific dissemination particularly due to the electronic means of dissemination. Thus, although, in most cases, these journals count on editorial boards or consultants for the approval of the texts, the journals are not widely distributed and/or sold and their periodicity is not as frequent as planned.

In addition to this cultural reality, our intention is to know, first, what is idealized or what "should" be the ideal contribution of a publisher to produce scientific information for the communication of information to foster production and the possible and desirable contribution of technological innovations for the production and dissemination of knowledge by university presses. On the other hand, we focus on what has effectively been done regarding these aspects.

2 Method

To achieve the purpose of this analysis regarding the dynamics of production and dissemination of scientific information by university presses, theoretical approaches and reports on the research object were revised to analyse the categories selected from the literature on the theme.

To do so, we consulted the Web of Science database, a reference database for global scientific production, whose collection consists of data obtained from the citations of international documents. Two data collection stages were required to analyse the international literature, as described below.

During the first stage, the aspects related to changes occurring in the university presses in recent years were investigated. During the search process, explicit terms directly associated with technology were avoided. Thus, we selected terms combined by the Boolean operators "AND" and "OR" for the retrieval strategy. We used "AND" to search for studies on two groups of terms separated by the operator OR, as follows: TS = ((change OR crisis OR evaluation OR impact OR development OR revolution OR advance) AND ("university press" OR "academic press" OR "publishing house" OR "publishing company")). For the search strategy we adopted as fields to locate the term, title, abstract and keywords and 42 papers were retrieved (see appendix A).

During the second stage, we included elements related to information technology; however, in accordance with the core of this study, we elected the concept of Open Access for the aggregation of attributes that include information and communication technology devices and processes, behaviours and the dynamics of scientific communication. Therefore, Open Access is considered a socio-technical concept. For this purpose, we used the following strategy: TS = (("open archives" OR "Open Access" OR "Open Access journal" OR "repositories" OR "Open Access publishing" OR "in-

stitutional repositories”) AND (“university press” OR “academic press” OR “publishing house” OR “publishing company” OR “university printer” OR “academic publisher” OR “publisher”). At this stage, 62 papers were retrieved.

For both strategies, characteristics such as language, date and country of publication were unrestricted to prevent the potential loss of important studies. The search was refined only by the type of document, that is, papers, according to the following expression: Document Types: (ARTICLE) AND Main Collection of Web of Science and refined by: Categories of Web of Science: (INFORMATION SCIENCE LIBRARY SCIENCE OR INFORMATION SYSTEMS COMPUTER SCIENCE).

When the papers from the scientific literature were organized, we began the process of analysis and interpretation of content thanks to the delimitation of categories, whose selection required the read-back of questions related to the research.

2.1 Categories of analysis

Once we had retrieved the papers, we analyzed and identified the different themes. Thus, we selected representative themes, consisting of six categories, as described below.

In Category 1, Publishing Market, we covered issues related to the journal crisis; management system of subscriptions; process of decision making; competitive advantages inherent to university presses; demand for textbooks; average prices; shared purchase; shopping trends; access costs and benefits of access to papers in journals; monopoly of publishers and the changes caused by the arrival of Open Access; billing system of editors; and Open Access.

In category 2, Dynamics of publishers, we found discussions on the advancement of knowledge; crisis at university presses; quality standards in editing and production; value aggregation to the process of information and the changing nature of work due to electronic publishing; dichotomy between trade and academic publishing; development of relationships between authors and publishers; online availability of scientific literature; broad access to content; study of citations from academic and commercial publishers; self-archiving of Open Access papers for knowledge; copyright transfer of journals for self-archiving; technological changes; history of university presses; use of institutional repositories; workflow of Open Access institutional repositories; transformation of the publishing industry; editorial policies; publication of Open Access monographs.

Category 3, Interaction with libraries, represents a collection of themes such as library network; electronic sharing among libraries; use of the Internet to deliver publications to the scientific community; integration of

digital collections, free access repositories; e-books; the current situation of Open Access; technical services of libraries affected by Open Access; exchange among libraries, and Open Access.

In Category 4, Scientific communication, the following are discussed: the new model for academic publishing; growth of Open Access; the extinction of printed books; impact of the open archive movement; the golden road; self-archiving by authors; arXiv citations; plagiarism in scientific communication; impact factor of journals; open-access journals and indexed in bibliographic databases; quantitative measurements of Open Access journals; green and golden road and hybrid models;

Category 5, Copyright, deals with issues related to copyright and installation of copiers at universities.

In Category 6, Technology, we found discussions on the evolution of academic publications; public repositories interconnected with database of publishers; electronic theses and dissertations; robots and assessment of their impact on use; data integration; MARC; Dublin Core (DC); URLs of journals; Open Access; PEER platform; PIRUS2 resources; social bookmarking services; proposals for metadata on Open Access database and Google Scholar.

During the second stage, we decided to differentiate the categorization adopted in the first stage regarding category 5 (Copyright). This differentiation occurred due to the inclusion of the Open Access concept in the second stage, which retrieved a number of papers associated with information technologies, which was different than the one found in the first stage of analysis. The concentration of papers in this category led to Category 6, Technologies. Thus, we decided to combine the categories copyright and the dynamics of publishing in the second stage as it would not compromise the interpretation of the group of papers.

2.2 Relational analysis among authors and themes

Relational movements occur through connections between actors in shared networks of social relationship. Thus, interactions among authors and themes can reveal meanings in network connections (Scott, 2008). When studying these relations, we perceived the mobilizing capacity of the actors in a social structure through their practices, considering that writing is a social activity that requires an intentional action. The associations established in co-authorship networks can combine structural elements that enable understanding the elements of the socio-technical dimension in a field of knowledge in development.

The representations of co-authorship networks combine elements based on the graph theory to understand the socio-technical devices that mediate the concepts adopted by the actors in co-authorship network.

The analysis was based on the two groups of references retrieved from the Web of Science database, as described in the method. The first one was related to the relationship among authors concerning the changes in university presses at present, and the second one was related to the multiple facets of the Open Access movement in university presses. We adopted the VOSviewer (visualization) for imaging and the Ucinet and Pajek softwares to calculate measurements and data conversion, respectively.

3 Results and Discussion

3.1 Part 1 – Changes in the university presses and technological advancement

a) Thematic analysis

During this stage, we analyzed the data identified in the search for papers that deal with the transformations that information and communication technologies have caused to the publishing context. Thus, 42 papers were retrieved, which are described in order of the categories mentioned in the method.

In Category 1, Publishing Market (table 1), papers address topics related to the publishing market, pointing out that university presses need to revise their strategies to remain competitive in view of the new demands.

Greco has investigated issues directly related to the publishing of university presses since 2001, analyzing ways to make them more competitive and profitable. We also point out that other authors discuss the business relationship of university presses such as managing issues, the development of strategic plans and demand for sales of textbooks published by university presses and changes in the publishing world, discussed through forums.

The first studies on Category 2, Dynamics of Publishers (table 2), began in 1967, when knowledge became structured after the American University Press (Washington, DC) published a handbook of publications. As of 1975, other studies on the topic are identified, such as: partnership with authors, crisis, Internet, marketing, electronic publishing, open-access journals, and scientific production.

Discussions about the quality of editing and scientific production appear in 1995, favouring other studies in which the authors shed light on topics related to the changes in the publishing world, stimulating partnerships and the development of digital technologies, providing quality standards in scientific production, and seeking for strategies for online access to full texts.

We note a concern related to the crisis caused by changes in scientific production, and proposals and initiatives, be them collaborative or to establish stand-

ards, that provide access and maintenance of university presses with the purpose of fulfilling their role as disseminators of scientific production.

It should be noted, though, that there are studies of citations of scientific literature published by university presses, which corroborates the interest in identifying the demand for this type of publication. In 2003, issues about the change in the practices of publishers due to the use of information and communication technologies are discussed.

In category 3, Interaction with libraries (table 3), themes that reveal the relationship between libraries and publishers are discussed, highlighting issues such as cooperation, digital library, university press and electronic access. These papers point to the need to create collaborative networks among libraries, integrating digital collections in Open Access repositories, and issues on formation of consortia with libraries to purchase access to electronic resources to minimize costs without damaging the publisher's role as the disseminator of scientific knowledge.

Again, we identified a concern with online access, which was already being discussed in 1996, particularly issues related to the development of networks, proposing that libraries should create collaborative networks of collections with online access to scientific production. We observed that aspects related to new forms of scientific production were being discussed as early as 2001, such as issues related to the journal crisis, which has affected both the university presses and libraries.

This impact can be seen in the studies of authors such as Greco; Jones; Wharton; Estelami (2007) when they assessed the economic structure of university libraries and other libraries, the impact of the “journal crisis” on the budgets of libraries and university presses, and the possible impact of the Open Access movement.

Thatcher (2015) and Jagodzinski (2008) discuss the crisis in scholarly publishing and Open Access for university presses, stating that the budget cuts of libraries affected the stability of many publishers, forcing them to review their editorial objectives, business practices, and management. Moreover, they point out that university presses will have to continue to adapt and assert their role in the academic community in view of the new modes of scientific communication such as digital publishing and the Open Access movement.

Category 4, Scientific Communication (table 4), analyzes issues related to scientific communication regarding the application of information and communication technologies. Thus, Lewis (1995) defends the development of a prototype for electronic journals. In this context, the author discusses that the changes in publishing, due to the journal crisis, influenced the changes

of access to scientific literature, either in the library or in the university press.

Concerns regarding Open Access to scientific production are observed since 2003. The authors infer that the digital or printed form does not replace each other because both can exist without supremacy of the other given that areas are organized in different ways. The authors also discuss the issues concerning the green and golden roads as ways to promote production and, once again, areas and consequently researchers organize themselves in different ways and make literature available and access it according to the needs of research and habits.

Another issue that stands out is copyright. In Category 5, Copyright (table 5), only one article dating from 1997 is retrieved when copiers were installed in universities to facilitate duplication of scientific books and papers, facilitate access to documents, leading to a conflict with the copyright law of scientific production.

b) Relational analysis of stage 1

Graph 1 shows the first stage of our research, which retrieved 42 papers from the Web of Science. After data processing using the Pajek software, the measurements were analyzed with Ucinet, and final visualization was generated by VOSviewer.

During this stage, of the 42 papers, we found 17 authors who produced in co-authorship. These motivated the founding discussion of the changes in university presses. With regard to the studies on the changes in publishing, Greco and Wharton were the most outstanding authors with a significant collaboration index and they represent the vanguard of research. It should also be noted that although the theme has been the subject of discussion since the 1970s, of the eight papers that Greco published since 2001, six were in collaboration, confirming his leadership in this area.

In the graphs, the relationship among authors is indicated by the lines representing the links through publications, while the thicker lines refer to the authors with a larger number of publications. We noted that the ability to further debate through scientific publications is also associated with capacity to engage in discussions through publications.

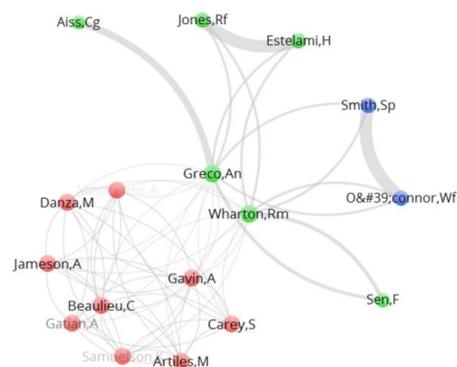


Figure I. Co-authorship network: changes in university presses

We observed some central aspects in the published literature by authors in the green cluster: a) change in the market of university presses in the United States due to the journal crisis; b) changes in the book market, recording little net growth in revenue and unit sales; and c) analysis of the decision-making process in university presses to determine retail prices and evaluate the effects of pricing strategies of publishers.

The red cluster is related to only one publication co-authored by 11 authors. These authors discuss consumer acceptance of e-readers, tablets and e-books, and these trends have been a business opportunity as a new market emerged and new readers were attracted to the price and portability of e-readers and e-books, resulting in a reduction in the number of bookstores and printed books sold in the United States.

c) Synthesis and some considerations of stage 1

In 1996, four papers discussed the changes in the scientific production promoted by information and communication technology, encouraging new ways of access for both publishers and libraries (Cohn, Brondoli, Bedell, Woodford, 1996; Wittenberg, 1996; Sisler, 1996; Dierickx, Evans, 1996).

Seven papers about the categories publishing market and interaction with libraries were found in 2001 and 2002. These papers discuss important aspects related to changes in publishing with the emergence of new media, leading to changes in the publishing market and sharing among libraries.

The following two years (2003-2004) are marked by the appearance of the first article discussing Open Access to scientific production (2003). During the period, topics on the development of innovative technologies and case studies on the German scientific publications are discussed.

By extending the period from 2001 to 2009, we noticed that the categories publishing market and scientific communication are widely discussed, being discussed in seven and six papers respectively, from which we

may infer that this occurred due to the use of internet as a means of communication and the availability of scientific production, influencing changes in the publishing market due to the new electronic media.

When we analyzed the past few years (2011-2015), ten papers related to the categories publishing market and dynamics of publishers are identified, each featuring five papers. Papers on the publishing market discuss issues related to the prices of publications, creation of shared acquisition, and the development of websites to generate sales and marketing. As for the papers in the category dynamics of publishers, the following topics are discussed: statistics on use of the journal in a given website; the need to fulfil the mission to publish the results of academic research effectively; access strategies to content; and the study of citations of academic and commercial publishers.

We found that the category scientific communication overcomes the other categories of the analysis by demanding a new attitude both from the publishing market, and consequently new ways to edit scientific production, and libraries, such as remote access or participating in collaborative networks that enable broad access to scientific production.

3.2 Part 2 – University presses in view of the Open Access evolution

a) Thematic analysis

In the second stage, we seek to relate university presses with scientific communication modes of production in view of the changes caused by Open Access.

In Category 1, Publishing Market (table 6), the journal crisis seems to have caused a change in the status quo of the academic publishing market. After understanding that change was irreversible, suggestions emerge as a way to adjust to a new context. Studies proposing innovation, business models and guidance on how to price services in Open Access resources appear. The literature also points to the need to establish forms of access to journals; somehow the relationship between the increased use of open-access journals would favor the international consolidation of the Open Access model. Debates regarding the importance of the Open Access model as an instrument against the monopoly of international publishers were equally discussed and the academic community has accused publishers of unfair commercial practices, which are detrimental to traditional forms of communication of scientific knowledge and technology.

In Category 2, Dynamics of publishers (table 7), three convergences of research were found: copyright, self-archiving and proactive actions of publishers/university presses. However, these groups are not isolated, but rather interrelated. The fine line between the study objects enabled the different themes to be combined, as

it is expected in similar research. With respect to copyright, it is known that the Open Access movement arises as a result, among other factors, of the academic opposition to models that have been gradually adopted by the major scientific publishers that, with the advent of electronic journals, are now offering access at ever-increasing costs. Thus, the published studies relate copyright to storage, particularly institutional repositories and self-archiving platforms. Some authors focus on self-archiving, as it is an excellent forum for sharing knowledge in fields of knowledge that takes advantage of speed to disseminate their findings. For this reason, hard sciences prefer this scientific communication model. A recent study (Melero; Rodriguez-Gairin; Garcia-Abad; Abadal, 2014) evaluates the self-archiving conditions of 1,615 Spanish journals.

In the same category, which deals with the dynamics of publishers, we noted that both publishers and university presses have sought ways to adapt to an alternative model of relationship, if not a new model, with the scientific community. This finding is explained in case studies that report the experiences in institutions from different regions and areas of knowledge.

In Category 3, Interaction with libraries (table 8), we found that the attention of authors, with regard to Open Access, is closer to the reflections of ordinary routines through activities of libraries, highlighting the relationships of exchange with other libraries associated with the scanning process of materials. In this regard, Koehler (2006) defends the expansion of titles of open-access journals as a way of reducing demand for scanning services, whose purpose is to distribute materials to other libraries that do not have the printed version of the article. The author found that the retrospective process of scanning collections and providing Open Access would facilitate access to copies of materials that were once printed.

It is reasonable to state that Category 4, Scientific Communication (table 9), discusses different aspects of the academic publishing world, which explains why most papers fall into this category. In addition to the amount of studies, the category scientific communication stands out for its rich diversity due to the object of study or the methodological research strategies. The studies focus on different fields, but case studies are more prevalent and report experiences in specific fields of knowledge and/or geographic regions.

In view of the variety in themes in this category, the dedication of the researchers to study the behaviour of the scientific community given the opportunities of Open Access resources is outstanding. This commitment included studies in different fields of knowledge that focused on authors, users and motivation of scientists to adopt an open communication model.

We also identified quantitative studies, characterized by the purposeful measurement of Open Access re-

sources. It should be noted that the study of Davis and Fromerth (2007) identified a 35% increase in citations of papers deposited in arXiv when compared with the closed version. Moreover, the identification of open-access journals indexed in bibliographic databases is also worth mentioning.

Less traditional discussions perceived differences between the versions of the papers available in closed journals and those in Open Access platforms. Thought-provoking analysis realized the ways of controlling the versions of papers; there were also regional versions of studies that showed the current publishing practices of journals such as the measurement of access to open-access publications in Korea and India.

In the analysis of category 5, Technology (table 10), the concept of Open Access was not restricted to technological areas, since the academic community endeavours to promote more democratic and universal access to knowledge. However, it is clear that information technologies play a key role in the implementation process of promoting access to scientific publications. Thus, resources of technologies, such as processes, techniques or services are the object of study of the studies related to this category.

It is essential to emphasize the experimental nature of these studies. Some assessed digital archiving platforms, social bookmarking resources, standardization of statistical models for Open Access services and the model for data integration, which the authors considered as useful resources for scientific editors. Solutions for the adoption of specific metadata models for Open Access resources, descriptions of processes and workflows that transform metadata records in MARC into Dublin Core (DC) were also suggested.

Studies that mention Google Scholar as an important resource in favour of academic activities, particularly the development of bibliometrics measurement and the integrative potential of Google Scholar with the various Open Access resources are outstanding.

Two studies address relevant aspects, but not widely discussed issues: Nagaraja, Joseph, Polen and Clauson (2011) address the problems resulting from changes of the URL address of papers available on the web, which is considered as a lapse of memory as the document is no longer found in the original URL; and Davis (2012) discusses the importance of scientific texts available on a website without a publisher, frequently a personal website that, although not certified, provide contents that have been previously published in a journal.

b) Relational analysis among authors and themes (graphs)

No authors with significant publications in the cut out of the second search strategy were outstanding. We understand that this is a natural behaviour in the dynamics of scientific communication as new themes are

developed together with the consolidation process of concepts. This seminal phase of development of new fields of knowledge is typically characterized by dispersed networks of co-authorship, whose relationships are more explicitly established by statements, refutations and epistemological agreements.

Though we did not identify denser networks among papers that relate Open Access to academic publications, we identified a central intermediation higher than 1 for the authors Nicholas and Jamali, suggesting that they are linked to others in co-authorships, acting as a bridge between concepts regarding the issue Open Access.

Graph 2 corresponds to the subnetwork with higher density. We adopted this approach to visualize the relations between the most recurrent themes and the actors. The actors in the red cluster discussed the following topics: the impact of open archive on the use and users of journals and technology assessment, particularly from search engines to map the patterns of use of Open Access papers and closed papers using the user community of Oxford University Press as the main empirical field, as shown in category 5 (table 10). In the green cluster, authors such as Jamali and Nicholas are the central link between different clusters, which reinforces the studies that belong to the red cluster, only adding another actor (Huntington).

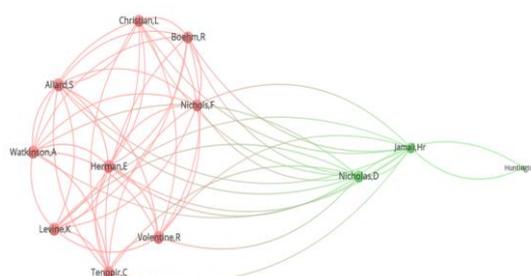


Figure II. Co-authorship network: cohesive sub-network in the discussions on Open Access

c) Synthesis and some considerations of stage 2

In 2005, Correia and Teixeira were the first authors who reflect on how the evolution of the Internet has transformed the processes of scientific communication. At that time, the web was already considered as a technological artefact capable of promoting major changes in the processes related to scientific communication. However, the changes discussed focused on access to means of communication, particularly scientific journals.

The interest for sharing regional experiences regarding Open Access of academic journals is clear in the first publications, such as the experiences in China and Germany. In the same vein, studies suggest changes in the relationships between editors and authors, such as

the study of Regazzi (2006) who analyzed the relationships, trends and challenges, as well as future trends for this relationship, considering the new funding policies.

As expected, the concern with the publishing market was the main topic of discussion in the first papers related to Open Access to scholarly publishing. And, although it is not the primary issue of university presses, the financial aspect cannot be neglected. More than the mere ability to profit, there is the aspect of survival, which is why authors such as Greco (2007), De Vries (2007) and Coleman (2009) dedicated themselves to assess the financial impact of Open Access on the sales of publishers.

Regarding the number of papers published, the year of the publications is an interesting fact. From 2005 (year of the first publication) to 2008, there was a balanced number of studies per year with a prevalence of exploratory studies, characterized by generalized observations about the changes that would occur in university presses and related topics. It is considered a natural movement in the early stages of discovery of a theme, a time when a scientific field seeks to situate changes in previously established knowledge structures or create new areas of topics.

In 2009 and 2010 few studies were representative and only five papers are published, while 13 papers were published in the two following years. However, far more important than the quantitative aspect are the approaches that emerged in 2011, whose studies reveal more specialized discussions with themes such as metadata for university publications (Walsh; Maureen, 2011), copyright aspects (Hanlon; Ramirez, 2011), and indexing databases for journals that adopt the Open Access model (Walters; Linvill, 2011).

3.3 Synthesis of analyses

The purpose of discussing, by means of a literature review, the modes of university publishing production regarding the use of digital media technology was to focus on the different means of scientific production. This was possible due to the effort to establish synthesis and convergences, which revealed the positions conducive to select the categories. This analysis allowed the understanding of how university presses have been interpreted and implemented concerning the dynamic production and dissemination of scientific information.

Themes such as changes in the scientific production, influenced by information and communication technology, favouring new means of access for both publishers and libraries, issues related to the publishing market and interaction with the libraries, the editorial changes with the emergence of new media and its consequences in the publishing market and sharing among libraries are outstanding.

A discussion on Open Access scientific production, which started in 2003, is related to innovative technologies and scientific communication, a category that is included in all discussions, marking the dynamics of publishers.

The predominant theme during the second stage of the research was the evolution of Internet and the consequent transformation in the scientific communication processes with an emphasis on the access to means of communication activities, particularly scientific journals.

Changes in the relationships between editors and authors, public funding policies and concerns for the publishing industry before the financial impact of Open Access publishing were discussed. The inclusion of issues such as metadata for university publications, copyright issues and indexing databases for journals that have adopted the Open Access model shows a progressive specialization of the debate.

Finally, it should be noted that the relational analysis considering the two groups (the changes in the publishing industry and Open Access movement) that the network relates to the changes in university presses is a cohesive network, unfractionated into subgroups, suggesting a consensus on theme. The second network has approximately 31 subgroups, which suggests a broad thematic dispersion. A consensus was extracted from this network, that is, the largest subgroup and the themes addressed by the actors/authors were described.

4 Conclusions

The present study addressed the scientific production related to issues and activities of academic university press and discussed the characteristics that distinguish them as creators of a specific type of cultural value. Within the context in which each operates, these publishers are the object of the scientific literature that perceives them in their vocation, practices and observable trends in its evolution. They have their own standards of production and the possible development of proposals for a university editorial policy that adequately benefits from technology and the expansion of alternative communicative process, these publishers feel the effects of the discussion on Open Access from a variety of approaches and points of views. Open-access literature, particularly observable as of 2000, shows the advantages and potentials regarding the challenges of ideal unrestricted and unlimited access to intellectual production. Within this context of contradictions among different points of views, modes of production of academic texts are valued and favoured by technology, which approximates the desire for Open Access for the recording of knowledge, motivating authors and publishers, particularly as a counterpoint to access restrictions and costs of scientific production.

The possibilities of this research are limited to the most obvious aspects of the modes of publishing production at present, marked by the impact of contemporary modes of production. Thus, the selection of categories about university presses from the literature, on one hand, allows analytical and interpretive procedures, but on the other hand, reduces the extent of the study. Therefore, based on the contradictions discussed, we suggest that further studies investigate the relationships between public and private, restricted access or Open Access, production resources, marketing, book prices, relationships between publishers and other entities, institutions or companies, copyright, representation of society, councils and editorial committees. Theoretical frameworks and themes will derive from them and overlap when discussion takes place, which has demanded the attention of scholars and actors.

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Appendix

Papers Analyzed

Table I

Object of study	Author (s)	Year
Change in the market of university presses in the United States due to journal crisis	GRECO	2001
Changes in the book market recorded low net growth in revenue and unit sales	GRECO	2001
Subscription management system capable of handling purchasing methods and relationship management with clients	KENNEWAY; SUTHERLAND; WILLIAMSON	2002
Analysis of the decision-making process in university presses to determine retail prices, and evaluate the effects of publishers on pricing strategies	GRECO; O'CONNOR; SMITH; WHARTON	2003
Significant change in the traditional means of distribution and the emergence of a sophisticated market of used books that impact sales.	GRECO; WHARTON; ESTELAMI	2005
A website that contains a growing collection of new and backlist titles of the Oxford University Press. It is an important step towards solving the so-called "monograph crisis".	GOLDSWORTHY	2006
Adoption of strategies to create demand for textbooks	FAN; WANG	2008
Average price of books, and publishing of titles by academic and commercial publishers that were bought by university libraries	GRECO; WHARTON; SEN	2012
Need to create a plan for shared purchase of titles by university presses	KAIRIS	2012
Forum discussion about the list of titles by university presses important for undergraduates, and comments on how university presses have showed (or not) concern about the changes.	MUDDITT; CREWE; REGIER; HAWORTH; HARVEY	2012
Shopping trends of university presses for university libraries	JONES, E.A.; COURANT	2014
Tips for Canadian and American university presses to launch non-profit websites to generate sales and marketing	GRECO; AISS	2015

Table I: Summary of papers – Category: Publishing Market

Table II

Object of study	Author (s)	Year
Advancement of knowledge - Manual on publication, American University Press, Hawes, GR	WINGER	1967
The crisis of university presses as a chronic condition	LEWIS	1975
Maintaining high quality standards in editing and production	WALKER	1995
Increasing awareness and understanding of how publishers can aggregate value to the process of academic information. How electronic edition could affect work	COHN; BRONDOLI; BEDELL; WOODFORD	1996
Needs to reformulate editorial programs to respond to changes in the publishing world	WITTENBERG	1996
The dichotomy between trade and academic publishing, and must embrace new opportunities	SISLER	1996
Recognition of partnerships between publishers and authors in the development of new academic research fields	DANESI	2001
The current state of academic publishing in German universities. University	HALLE	2003

administrations should develop university presses and online publishing		
Collaborative development of innovative digital technologies	YU	2004
Statistics on use of journals in the website, including all publishers, along with all higher education institutions in the UK and subscription to offers of these publishers	CRADOCK; MEEHAN; NEEDHAM	2011
University presses and academic communities, research institutions and other academic publishers strive to fulfill the mission to make academic research public within the system.	WITHEY; COHN; FARAN; JENSEN; KIELY; UNDERWOOD; WILCOX; BROWN; GIVLER; HOLZMAN; KEANE	2011
University presses must manage all parties, seeking strategies for broad access to content	BROWN	2013
Study of citations from academic and commercial publishers - Scopus – field of history - book titles	ZUCCALA; GUNS; CORNACCHIA; BOD	2015

Table II: *Summary of papers – Category: Dynamics of publishers*

Table III

Object of study	Author (s)	Year
Development of the regional network among libraries	DIERICKX; EVANS	1996
Investigation of how information resources are shared electromechanically among libraries in China	LIU; ZHANG	2001
New media based on online web resources of full-texts. Publishers use Internet to offer their publications, and the efforts made by libraries to form purchasing consortia to access electronic resources	ARORA	2001
Libraries at the University of Mississippi State established a plan for the approval of university presses, and the decision of revoking or blocking seven university presses	PLODINEC; SCHMIDT	2002
Integration of digital collections, Open Access repositories, data services and academic publishing at the University of Sydney	COLEMAN	2009
The current and potential impact of e-books on the Library of Congress and the US Copyright Office, including budgets, personnel and operations, and the need to digitize the collection of books in the Library of Congress.	ARTILES; BEAULIEU; CAREY; DANZA; GATIAN; GAVIN; GRECO; JAMESON; MCWILLIAMS; SAMUELSON; WHARTON	2013

Table III: *Summary of papers – Category: Interaction with libraries*

Table IV

Object of study	Author (s)	Year
Creation of a new academic publishing model. The GAP (German Academic Publishers). One of the objectives of GAP is to make publications available for free on the internet.	BRAUN	2003
The list of funding agencies that support free access is growing, and there are more than 1.2 million papers in PubMed that are freely accessible through the websites of publishers.	GLOVER; WEBB; GLEGHORN	2006
Digital revolution does not foresee the extinction of printed books, but rather an opportunity to use documents in various formats. University presses, libraries, and readers do not have to decide between print and electronic books as they may have both forms of access	BARTLETT; BROWN; KEANE; WILCOX; PFUND; BACHER	2007
Analysis of how the log in was conducted to determine the impact of the Open Archives movement on the use and users of journals	NICHOLAS; HUNTINGTON; JAMALI	2007

The golden road is the most suitable for the Open Access movement. It also verifies how scientists behave regarding the different production styles and their publishing habits.	BEGER	2007
The impact on use with respect to a project aimed at establishing patterns of use for Open Access papers and restricted-access papers at the Oxford University Press of the Glycobiology journal that provides papers in both forms	HUNTINGTON; NICHOLAS; JAMALI	2008

Table IV: *Summary of papers – Category: Scientific communication*

Table V

Object of study	Author (s)	Year
Recent revisions of the copyright law are a source of debate on the issue of scientific communication and commercial interests in determining copyright. Issues related to unrestricted copying, electronic distribution and copyright protection.	STCLAIR; THATCHER	1997

Table V: *Summary of papers – Category: Copyrights*

Table VI

Object of study	Author (s)	Year
The impact of the “journal crisis” on the budgets of academic and non-academic libraries and nonprofit university presses.	GRECO; JONES; WHARTON; ESTELAMI	2007
Ways to aggregate value to research and innovation for businesses in Sydney eScholarship (Australia).	COLEMAN	2009
Costs and benefits of possible ways to increase access to academic journals considering five different scenarios (five years).	JUBB; COOK; HULLS; JONES; WARE)	2011
The monopoly of publishers and changes with the arrival of Open Access and the joint effort of the publisher at the University of Florida and the Department of Mathematics to find ways to calculate editing costs.	MORRIS-BABB; HENDERSON	2012
A set of standards for analyzing business models of scientific publishers, particularly those that offer Open Access.	VILLARROYA; CLAUDIO- GONZALEZ; ABA- DAL; MELERO	2012
Investigation and classification of billing practices of 77 major Open Access publishers, responsible for publishing 1,000 journals.	BJORK; SALOMON	2012
Search through simulation to predict the evolution in publishing scenarios.	BERNIUS; HA- NAUSKE; DUGALL; KONIG	2013

Table VI: *Summary of papers – Category: 1 (stage 2) – Publishing market*

Table VII

Object of study	Author (s)	Year
The evolution of relations among authors with publishers, current trends and challenges.	REGAZZI; CALIGUIRI	2006
Analysis of the main funding agencies in biomedical sciences in view of Open Access.	GLOVER; WEBB; GLEGHORN	2006
The importance of self-archiving of Open Access papers for knowledge, emphasizing copyright issues.	JENKINS; PROBETS; OPPENHEIM; HUB- BARD	2007
The positions of publishers in copyright transfer agreements of self-archiving journals (copyright aspects)	COLEMAN	2007
Evaluation of how a Hindawi publisher has adapted to technological changes.	PETERS	2007
Evaluation of the role of publishers after the advent of the Internet, particularly the experiments of the IMISCOE project (Netherlands)	DE VRIES	2007
The history of university presses in North America.	JAGODZINSKI	2008
The use of Institutional Repositories as filing space for original studies as an	ROYSTER	2008

alternative for commercial or university presses.		
Evaluation of the trends for resolving copyright issues in Open Access Institutional Repositories.	HANLON; RAMIREZ	2011
Evaluation of the relationship among journal editors and directors of university presses with digital libraries of theses in the fields of social sciences, arts, humanities.	RAMIREZ; DALTON; MCMILLAN; LEIA; SEAMANS	2013
Evaluation of the editorial policies and conditions for self-archiving of 1,615 Spanish academic journals.	MELERO; RODRIGUEZ-GAIRIN; ABAD-GARCIA; ABADAL	2014
The results of the first phase of the research project on confidence and authority in scientific communication in light of the digital transition.	NICHOLASET AL	2014
The context of the publication of Open Access monographs by university presses, often in association with libraries.	THATCHER	2015

Table VII: *Summary of papers – Category 2 (stage 2) – Dynamics of publishers*

Table VIII

Object of study	Author (s)	Year
The current state of Open Access (OA) in China, including problems and possible solutions and the role of the academic library in OA.	FANG, CONGHUI; ZHU, XIAOCHUN	2005
Investigation on how library technical services have been impacted by OA	KOEHLER	2006
Literature review on exchanges among libraries, assessing the arrival of Open Access.	MCGRATH	2008
Issues related to libraries and restrictions on scanning of scarce materials for exchange with other libraries.	MCGRATH	2013

Table VIII: *Summary of papers – Category 3 (stage 2) – Interaction with libraries*

Table IX

Object of study	Author (s)	Year
Factors that determine the publication and OA behavior in various areas in OA.	FOURNIER	2005
Evaluation of the behavior of self-archiving by authors in social sciences journals	ANTELMAN	2006
Evaluation of the impact of OA on use and regular users.	NICHOLAS; HUNTINGTON; JAMALI	2007
Analysis of papers published in four mathematics journals deposited in arXiv that received 35% more citations than those not deposited in arXiv.	DAVIS; FROMERTH	2007
Comparison of the versions of papers available in Open Access with final version in the journal and differences between versions.	GOODMAN; DOWSON; YAREMCHUK	2007
The union between the golden and green roads in OA and examples from the Hamburg University Press and University Library of Hamburg	BEGER	2007
Description of the state of Open Access (OA) in the biomedical field in 2005.	MATSUBAYASHI; KURATA; SAKAI; MORIOKA; KATO; MINA; UEDA	2009
Evaluation of a new way of identifying plagiarism in scientific communications.	MEDDINGS	2010
Analysis of data sharing often associated with the funding agency and publisher requirements, journal impact factor, or experience of the investigator.	PIWOWAR; CHAPMAN	2010
Investigation to what extent Open Access journals (biology, computer science, economics, history, medicine and psychology) are indexed in bibliographic data-	WALTERS ; LINVILL	2011

bases.		
Analysis of publications in 1,437 Korean journals with the purpose of understanding the publishing situation of journals and the level of Open Access in Korea.	SHIN	2012
Analysis of journal policies in Information Science (USA) and the publication of supplementary materials.	BORREGO; GARCIA	2013
Quantitative measurements of OA journals, including fees for late publications, duration of embargo, and citation rates.	LAAKSO; BJORK	2013
Analysis of Open Access features of 462 journals published in India concerning the green and golden roads and hybrid models.	MUKHERJEE	2014
Review of previous studies and the current knowledge about green road to Open Access.	BJORK; LAAKSO; WELLING; PAETAU	2014
Case studies to illustrate different journals that have benefited from models of library publications	BUSHER; KAMOTSKY	2015
Evaluation of the golden road to Open Access journals with the purpose of proposing future rankings.	ENNAS; DI GUARDO	2015
Evaluation of the behavior of researchers funded by the National Institutes of Public Health in Croatia concerning the interest in publishing in open-access journals.	PONTIKA	2015
Identification of barriers for dissemination and communication of scientific studies in self-archiving institutional repositories in Romania.	REPANOVICI; BARSAN	2015

Table IX: *Summary of papers – Category 4 (part 2) – Scientific communication*

Table X

Object of study	Author (s)	Year
An overview of the continuing evolution of academic publications and communication of knowledge as a result of the Internet revolution.	CORREIA; TEIXEIRA	2005
Comparison of content from of 47 different databases with the Google Scholar.	NEUHAUS; NEUHAUS; ASHER; WREDE	2006
Proposal for sets of data in public repositories, interconnected with databases of publishers to maintain and sustain academic record in digital format.	BORGMAN	2008
Discussion about the design of electronic theses and dissertations at the Ben-Gurion University of the Negev, Beersheva, Israel.	ASNER; POLANI	2008
Evaluation of the use of robots with the purpose of establishing standards for use of open-access papers and closed-access papers at Oxford University Press.	HUNTINGTON; NICHOLAS; JAMALI	2008
Proposal for data integration from a particular system, suggesting that it is ideal for publishers.	CULLING	2010
Description of processes and workflows that transform records in MARC into Dublin Core (DC) in the Knowledge Bank from the institutional repository of Ohio State University.	WALSH	2011
Evaluation of the status of URL of open-access journals in the medical field.	NAGARAJA; JOSEPH; POLEN; CLAUSON	2011
Evaluation of the PEER platform as an archiving framework of previously evaluated and deposited papers.	WALLACE	2011
Evaluation of the resources of PIRUS2 (focused on statistical standardization of individual papers).	SHEPHERD	2011
Explores the possibility of using data from social bookmarking services (Bibsonomy) to measure the use of information by academic researchers.	BORREGO; FRY	2012
Evaluation of accessibility of papers available on websites without an editorial board and personal libraries.	DAVIS	2012

Assessment of current practices and solutions proposed for Open Access metadata.	HUTCHENS	2013
Evaluation of contents in Google Scholar (including correlations between the number of GS versions and citation counts), and value of institutional repositories to increase the academic impact.	PITOL; DE GROOTE	2014

Table X: *Summary of papers – Category 5 (part 2) - Technologies*