

UNIVERSUM AFTER 32 YEARS OF ITS FOUNDATION: BIBLIOMETRIC AND RELATIONAL ANALYSIS

Universum después de 32 años de su fundación: análisis bibliométrico y relacional

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ABSTRACT

In the following paper, a bibliometric and relational analysis had been carried out on the *Universum* journal from its date of foundation (1986) to the present (2017). A database had been prepared with all the publications of the journal (47 issues in 32 years), with a total sample of 765 publications. Bibliometric, collaborative indicators (Subramanyam, Lawani and, coefficient of collaboration) we had been applied, relationships were analyzed, both at the level of countries and Chilean institutions, as well as the participation by sex in the different years. The results show that the largest number of documents are produced by only one author (84 %), and led mainly by male authors (71.3 %). We can see a balance in the number of authors both male and female in the years 2000-2002. The country with the highest production within the journal is Chile, while the institutions that contribute the most and generate collaboration links are the University of Talca, University of Santiago de Chile and the University of Chile. This analysis allows representing the history and tendency of the journal at the level of authors and authors relationships.

Keywords: bibliometric, authors relationship, journal.

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RESUMEN

En el siguiente artículo se realizó un análisis bibliométrico y relacional a la revista *Universum* desde la fecha de fundación (1986) hasta la actualidad (2017). Para ello se elaboró una base de datos con la totalidad de publicaciones de la revista (47 números en 32 años), con una muestra total de 765 publicaciones. Se aplicaron indicadores bibliométricos, de colaboración (Subramanyam, Lawani y coeficiente de colaboración), se analizó las relaciones, tanto a nivel de países como de instituciones chilenas, así como la participación por sexo en los distintos años. Los resultados evidencian que la mayor cantidad de documentos son elaborados por solo un autor (84 %) el cual es liderado principalmente por autores masculinos (71.3 %). Se puede ver un equilibrio en la cantidad de autores tanto femeninos como masculinos en los años 2000-2002 y el país con mayor producción dentro de la revista es Chile. Las instituciones que más aportan y generan vínculos de colaboración son la Universidad de Talca, Universidad de Santiago de Chile y la Universidad de Chile. Este análisis permite representar la historia y tendencia de la revista a nivel de autores y relaciones.

Palabras clave: bibliometría, relaciones, revista.

1. Introduction

Numerous studies have tried to explain and denote the existence of collaborations among scientific publications. Scientific journals can originate from different necessities. Amongst the most common ones there is the interest in communicating the results of a research in a simple manner, as well as the capability to create critical discussion spaces. Nowadays, scientific journals have become a reliable channel for the communication of research articles, since it is assumed that the contents of such have been assessed thoroughly by the scientific community (Salas et al., 2017).

Publication itself allows to differentiate perspectives in determined fields of knowledge, which enables the reader to either agree or disagree with an article, to reference it, criticize it, and even, more importantly: get inspiration and new ideas from the previous researches, simultaneously generating new publications (Polanco-Carrasco, 2015).

New technologies for information and communication have changed the main paradigm in scientific publications and research. The internet, in

this context, has become (for the scientific world) a new way of showing a great spectrum of contents and data that are accessible at a lower cost than printed hard-copies of papers (Wren, 2005). Moreover, the internet provides with immediate diffusion at a low cost, while adding values of storage, processing, search and analysis in a more exact manner (Rodríguez Piña, 2006). Bibliometric analyses use this same data, aiming to quantitatively identify nexus of collaboration, quantity and reference projection, theme aggrupation, methodology uses, resource sources, author gender, among other aspects (Reutzler & Mohr, 2015).

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The concept of bibliometrics has changed since in 1922 E. Wyndham Hulme first used the term “statistical bibliography”, after presenting two conferences that would later on become a book (Hulme, 2015). In 1930, the concept evolved into “the science of science” (Garfield, 2009; 2006), and in 1955 the first reference analysis “citation index entry” is introduced (Garfield, 1955), with a similar scheme to the Beilstein compendium (Taylor, 1948), thus generating a new scenario for the work of scientific research. In 1962, Gross and Pritchard replace the term “statistical bibliography” with the concept of “bibliometrics”. The authors proposed bibliometrics has the mission of applying both mathematics and statistical methods to show the course and development of the scientific disciplines (Lawani, 1981; Gross & Pritchard,

1969).

In Hispanic America, several bibliometric analyses have been done with diverse journals, such as: studies over the professional trajectory and access to directive positions in women (Selva, Sahagún, & Pallarès, 2011), scientific productivity and collaboration in viticulture and enology in Latin-American countries (Aleixandre, Bordeu, Aleixandre-Tudó, Bolaños & Aleixandre-Benavent, 2013), analysis of the south American research in sport sciences (Andrade, López, Ramírez-Campillo, Beltrán, R. & Rodríguez, 2013), or some specific ones as: short-term impact of the Chilean journal of agricultural research (Krauskopf, 2012), most relevant Iberic-American journals related to clinical psychology and health (Ariza y Granados, 2012), scientific production and the use of the Chilean Nutrition Journal (Tomás-Casterá, Sanz-Valero, y Wanden-Berghe, 2010), impact and visibility of the Chilean Surgery Journal after its indexation to SciELO and ISI databases (Cartes-Velásquez, Moraga, Aravena y Manterola, 2012), Bibliometric analysis of the Psykhe Journal celebrating its 25 years of trajectory (Salas et al., 2017) or the Mexican study that analyzes the initial stage of the Mexican Politic Sciences Journal upon 60 years of its foundation (Olvera, 2016).

This publication presents a bibliometric analysis of the *Universum*¹ Journal of Humanities and Social Sciences, edited and directed by the Institute of Humanistic Studies Juan Ignacio Molina of the University of Talca. The journal is indexed in the SciELO Chile, SCOPUS, LATINDEX, EBSCO, PROQUEST, DIALNET and REDALYC databases (McBride, 2009). Currently, it is located in the 3th quartile (Q3) in the category of Arts and Humanities (miscellaneous) and Social Sciences (miscellaneous), presenting an H index of 7, according to the Scimago records (Scimago Journal & Country Rank, 2018). The aforementioned terms are characteristics that journals must have in order to be considered as main current journals (Valderrama, 2012), as the ones recognized by Web of Science, previously the Institute for Scientific Information (ISI) (Krauskopf & Vera, 1995). The journal has been edited

¹ ISSN: 0716-498X en su versión impresa e ISSN: 0718-2376 en su versión electrónica.

continuously and uninterruptedly, publishing a volume every six months to this day. Nevertheless, the journal was published annually from the first to the 18th issue (with the exception of issues 2 and 3).

Finally, it is worth mentioning that no bibliometric analysis has been done with *Universum*. As to honor the director of this particular journal, the late Dr. Javier Pinedo, and celebrate over three decades of edition, the present paper aims to answer the following questions: what has been the historical path of *Universum*? How has the participation of men and women been in it? How and when has there been collaboration between the participant countries and institutions? This all as a mean to help consolidate the aforementioned journal even more in the national and international academia.

2. History of *Universum*

Starting from the first issue of *Universum*, its founder Vittorio Di Girolamo planned publications universal in character. He argued that “the essence of all ideas, studies, experiments, works and experiences were particular to the essence of the human creature, to talk about *Universum* is established as the main truth: the union of the diverse” (Di Girólamo, 1986: 1). This is synthesized in a multidisciplinary journal, attending primarily to the publication interests that the different Institutes and Faculties of the University of Talca had at the time (Pinedo, 1998). In 1966, in the 11th edition of the journal, it was decided to modify the presentation of the articles, updating its format to have a more academic approach: the traditional two-column format is eliminated, as a mean to favor text over the use of pictures (Pinedo, 1996).

In 2000, Javier Pinedo highlights the direction of the journal through its publications, as being: “acknowledged among Chilean, Latin-American and international academics, who are interested in the study of culture, history and thought” (Pinedo, 2000: 8). Nowadays, we can state that the dimensions of the journal can be grouped in four categories: “Humanism and letters (35,4%); social, political and cultural theory (28%); administration and economic development (12,3%); and study of ideas (10,6%)” (Diaz, 2018a: 137).

In its history, *Universum* has been directed by five signing directors.

In the two first editions, 1 and 2 N°1, it is Vittorio Di Girolamo who managed the journal between the years 1986-1987. In the editions 2 N° 2 and 3, Álvaro Rojas Marín takes the position of director in the years 1987-1988. From there on, Francisco Javier Pinedo managed the journal, excepting for a brief period when he was succeeded by Miguel López Astorga from edition 28, N°1-2013 until edition 31 N°2-2016 (López, 2013). Francisco Javier Pinedo signs the editorial again in the year 32-2017 Vol. 1 (Pinedo, 2017), and is succeeded in the next issue by Claire Mercier, as subdirector (Mercier, 2017) until N°1 of 2018 (Mercier, 2018). In the second issue of that same year, Mercier signs as director of *Universum* until today.

Since its foundation, there has been a paragraph of “Presentation” where the director could sign anonymously under the name of their position (“The director”). Nevertheless, the registry of the committee that conformed the journal introduced themselves in the inner cover of every edition (Pinedo, 1996). In 2000, the section “Presentation” is transformed into what is now known as the “Editorial”, still plainly signing as “The director” (Pinedo, 2000). In 2004, Francisco Javier Pinedo signs for the first time with his name and position (Pinedo, 2004).

The *Universum* Journal of Humanities and Social Sciences is indexed in the databases of SciELO since 2005, confirming its commitment to provide with a quality platform for researchers linked to the development of humanities and social sciences (Pinedo, 2005). Afterwards, in 2008, it is indexed in SCOPUS, with the finality of acknowledging the academic relevance of indexation in scientific journals, according to Pinedo himself in an interview (Díaz, 2018b).

Through their official website, <http://universum.otalca.cl/> the journal presents a free-access policy to all its historical records, which helps with the diffusion of the information. There are 5 documents that are not in the online registry, but are available in hard copy.

3. Method

The present study included an analysis of 765 documents published

in *Universum* between the years 1986 and 2017, distributed in 47 issues. The compilation of the documents was made through the journal's own website and the hard copy of the archive, available at the Main Library of the University of Talca, Campus Talca. The method is descriptive, using the published documents (Montero & León, 2007), through a systematic description of a group of general indicators and indicators associated to the catalogs in which the journal is indexed (Table 1).

In the description of the productivity and collaboration indicators, the article was used as the minimum unit of analysis. In the international collaboration, the nationalities per author in each article have been used as evaluation criterion. Thus, an article can have contributions from more than one country simultaneously. Starting from these components, selected indicators have been evaluated, corresponding to the ones that have been used regularly in the referenced bibliometric studies. In these, the frequency of documents is described according to a group of variables and its respective levels or categories (i.e. 1, 2, 3, 4, 5, 6, 7 authors, sex, language, institution, theme, type, essay, scientific article, review, discourse and pages).

The assigning and recount of the documents have been carried out by a three-peer evaluation and judgment (two of them are the coauthors of this article, plus one external judge), following the double-blind procedure (Devereaux, Manns, Ghali, Quan, Lacchetti, Montori, Bhandari, & Guyatt, 2001). When there was a disagreement in the classification, this was discussed in a second stage, where it was agreed to choose the most representative category. This procedure has been used for the methodology assignment. Lastly, as a mean to facilitate the description and describe the results, the 32 years of productivity have been divided in four 7-year periods.

4. Analyses

Table 1

Indicators calculated for this study

Indicators	Description
<i>Bibliometric indicators</i>	
Amount of documents	Amount of document published in the journal between the years 1986-2017.
Type of documents	Type of publication, according to the judge's classifications.
Language	Language in which the corpus of the publication is written.
Institution	Name of the associated institution as declared by each author.
Country	Nationality of the associated institution by each author.
Sex	Determined by the common gender of the first name of the signing author.
<i>Collaboration indicators</i>	
Number of authors	Number of signing authors per publication

Lawani Index

Corresponds to the weighted mean of authors per article, distributed by the defined publication periods. It is calculated with the following equation:

$$\text{Lawani Index} = \frac{\sum_{i=1}^N j_i \cdot n_j}{N}$$

where:

N = Total amount of documents (Lawani, 1981; Vinkler, 1993:224).

j_i = Frequency of i co-authors in collaboration

n_j = amount of documents j published in collaboration by i co-authors

There is no maximum value for this index.

Subramanyam Index Corresponds to the proportion of articles with multiple authors. It is calculated with the following equation:

$$\text{Subramanyam Index} = \frac{N_m}{N_m + N_s}$$

where:

$$0 \leq \text{Subramanyam Index} \leq 1$$

***N_m** = Number of documents with multiple authors published, in a determined period of time.*

***N_s** = Number of documents with a single author published during the same period of time (Subramayan & Stephens, 1982; Subramanyam, 1983: 37).*

Collaborative Coefficient

Corresponds to the proportion of articles with multiple authors (2 or more). It is calculated with the following equation:

$$\text{Coefficient of Colaboración} = \frac{\sum_{i=1}^N \left(\frac{1}{J_i}\right) nij}{N}$$

where:

N = Total number of documents.

J_i = Frequency of *i* co-authors collaborating.

nij = Number of documents *j* published in collaboration by *i* co-authors.

Which value oscillates between 0 and 1, where values close to 0 show a strong presence of documents with only one author (Ajiferuke, Burell, & Tague, 1988: 424).

Association indicators

Total participation of Authors

Corresponds to the number of authors (per nationality or institution) that conform the totality of articles without discriminating by position.

First Author

Corresponds to the number of authors (per nationality or institution) that possess the first position in the totality of articles.

First autor alone

Corresponds to the number of authors (per nationality or institution) that participate alone in a publication in the totality of articles.

Inter-relation

Corresponds to the number of authors that participate with the same nationality or institution in one publication.

$$Inter - relation = \frac{\sum_{i=1}^N (n_i \equiv f) - (n_i \neq f)}{N}$$

where:

N = Total number of authors in the article

f = Institution or country of the first author

n_i = Number of authors

Which value oscillates between 0 and 1. Value of 1 shows a national participation and any number below 1 indicates international participation.

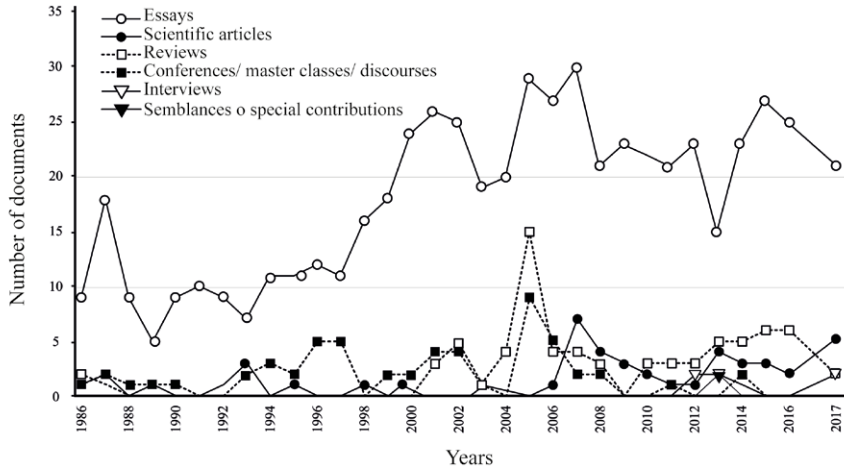
Number of relations

Corresponds to the association existing between the first autor and the rest of the authors from different institutions or countries in the same article.

6. Results

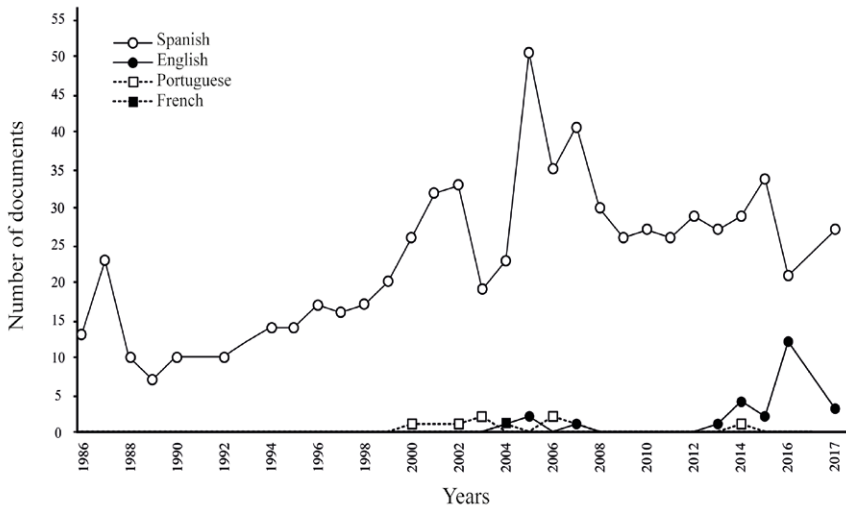
Results consider three main aspects of this type of study: productivity, journal and its evolution through time. Moreover, published documents indicators are presented: bibliometric indicators, collaboration, collaborative coefficient and association indicators.

Figure 1. Indicators of the number of documents per year by type of document. Number of documents produced as: essays, scientific articles, reviews, conferences, master classes, discourses, interviews, semblances o special contributions.



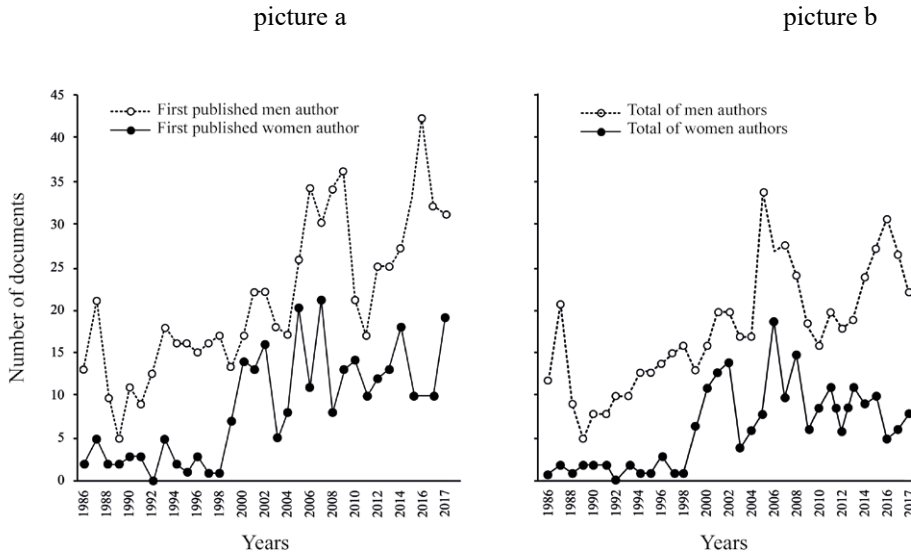
Source: own elaboration

Figure 2. Indicators of the number of documents per year by language. Number of appearances of languages: Spanish, English, Portuguese and French.



Source: own elaboration

Figure 3. Indicators of the number of authors per year by sex. Number of appearance of men and women in documents as first author (picture a) and total of authors (picture b).



Source: own elaboration

Analyzing the participation of males and females per year, a relevant difference was found in female participation since the founding years (first edition of *Universum* in 1986). This difference is maintained until 1998 in all publications. In 1999, the first growth of female participation in authorship can be observed. In 2000, the participation of males and females is almost equated, trend that is sustained until 2002. After said year, female participation decreases once more.

This phenomenon can be explained by the incorporation of a new vision in the early 2000: “In that same track, we want to go beyond an integration that allows only the exchange of objects, towards a cultural integration in which we can be involved as representatives of the humanities and social sciences [...] and contribute to develop a civil society that shows a disposition to commit in the support of binational gatherings, and particularly that supports the cultural

and academic exchange” (Pinedo, 1996: 6). Furthermore, a new section was incorporated to *Universum* “Latin-American studies network” in that very same year (Pinedo, 1999: 6).

Regarding the total recount of male and female authorship (1986-2017), 676 male publications can be found, corresponding to the 71.3%, while females have published 272 documents, the 28.6% of the total sample.

Figure 4 depicts the collaboration among countries in relation to the declared affiliations by the signing authors, and according to the number of national and international documents. This was done by contrasting the main authorship (first declared author) with the rest of the authors (from the second one, according to what has been declared). The country with the largest amount of documents is Chile, with 12 international collaborations, mainly with Argentina, followed by Spain and Germany. It can be observed that these collaborations are infrequent for the most part, thus these publications can be considered isolated events.

Delimitating the sample to publications with Chilean authorship, collaboration nexus among different institutions can be observed. Figure 5 shows the network of collaborations amongst institutions according to the number of documents and collaborations, contrasting the main authorship (first declared author) with the rest of the authors (from the second on, according to what has been declared). The institution with the most documents is University of Talca, with 8 inter-institutional collaborative publications, with: University of Playa Ancha, Martin-Luther Universität Halle-Wittenberg, Cambridge University, the Natural History museum, Pontifical University of Chile, National University of Cuyo, Catholic University of Temuco, University of Los Lagos and University of Santiago of Chile. University of Talca and University of Santiago of Chile have the highest rate of participation, with 210 and 73 documents respectively.

Table 1: Number of publications by number of authors and period of time.

	Period				Total
	1986-1993	1994-2001	2002-2009	2010-2017	
Number of authors					
1	79 (83,2 %)	148 (94 %)	234 (87 %)	183 (75 %)	517 (84 %)
2	11 (11,9 %)	6 (4 %)	28 (10 %)	35 (14 %)	77 (10 %)
3	3 (3,1 %)	2 (1 %)	4 (1 %)	18 (7 %)	27 (4 %)
4	0 (0 %)	2 (1 %)	3 (1 %)	5 (2 %)	10 (1 %)
> 4	2 (2,1 %)	0 (0 %)	0 (0 %)	2 (1 %)	4 (1 %)
Total	95	158	269	243	765 (100 %)
Indexes					
G.C. Subramanyam	0,17	0,06	0,13	0,25	0,15 ^a
I.C. Lawani	0,45	0,16	0,30	0,64	0,39 ^b
CC ^c	0,11	0,04	0,08	0,17	0,10

Note: percentages were calculated over the total per period of time.

^a Subramanyam Index obtained by total period of time (1986 - 2017)

^b Lawani Index obtained by total period of time (1986 - 2017)

^c Collaborative coefficient (cc)

Regarding the quantity of authors per scientific production, it can be observed that the highest percentage of works (84%) is presented by a single author, while the production of multiple authorship documents has a lower percentage (16%). Additionally, when different time periods are observed, the production of authors from the first stage (1986-1993) and last stage (2010-2017) can be contrasted. There is a difference in the quantity of documents received, where the participation of the authors is redistributed, augmenting from 17.1% to 24% in the case of multiple authorship, while single author documents diminish from 83.2% to 75%.

In percentage terms, there is a reduction in the participation of single author. The sample indicates that the quantity of documents received per year has doubled (from 95 to 243), meanwhile, documents from a single author went from 79 to 183, augmenting in 131%. The documents with multiple

authorship went from 16 to 60, increasing in 275%². Subramanyam index, which calculates the amount of documents with two or more authors over divided by the total amount of documents, reaffirms the growth of multiple-authorship, from a 18% in the period 1986-1993 to a 29% in the period 2010-2017.

Moreover, the Lawani index, which complements the information regarding the multiple authorship of documents by calculating the weighted mean of authors per article in each period, indicates that the increment of collaborations has led to an increased number of multiple authors per document, augmenting from 1, 59 authors in the time period of 1986-1993 to 2, 18 in the period 2010-2017 (see Table 1).

Together, these indexes suggest that not only the number of documents with two or more signing authors has increased, but also the number of signing authors has experienced a rise, as suggested by the collaborating coefficient.

5. Conclusions

Universum achieved 32 years of existence with the support of the University of Talca and the Institute of Humanistic Studies “Juan Ignacio Molina”. Therefore, studying its characteristics over time is relevant when it comes to make decisions regarding the construction and publication of knowledge from a University that aims to maintain its status in the ranking of best universities in the country.

The journal was conceived in an almost artisanal manner, with its construction being established at an institutional and local level, but aiming to grow immensely. This aim is reflected on the title of the journal, according to Dr. Javier Pinedo, who expresses that the genesis of *Universum* is conceived as a response from a group of academics that live in a time of “non-humanities”, which is in the midst of the Chilean dictatorship. Additionally, a Pinedo mentions that a main feature of the journal is its administration, which has been developed by a group of academics from the University and the women

² Documentos firmados por uno o más autores; ver Tabla 1.

collaborating in the Institute (Díaz, 2018b), who constantly contributed to push forward the editions of the journal. These characteristics impact directly the way the journal is conducted and its intellectual orientation. We can highlight that, by being a mainly masculine journal, *Universum* must adopt the new gender equality principles that have arisen from the national feminist movements.

All the previously stated points reflect the necessity of this type of works, which allows to make visible the way science is developed in a written platform. Thus, there is no doubt that the growth of *Universum* has a direct relation to the relevance of its indexation, which has helped to elevate the impact, category, references and collaborations of this journal. This has given it a relevant place in the humanities and social sciences fields, constituting an academic legitimization space, as it is expressed in the SciELO and SCOPUS indexation.

To summarize, *Universum* has behaved as a predominantly masculine, national journal, characterized mainly by single-authorship, where the written essay in Spanish is the most prevalent document, and with close, non-extended networks of collaborations. Moreover, although its collaboration index has progressively augmented, it is still a pending task to elevate it even more, as well as equate the contribution of female authors to male authors, and potentiate the publications in foreign languages. Here we leave an invitation to the authors, to work towards an administration and editorial decision-making that may be replicated by other journals in different areas of knowledge.

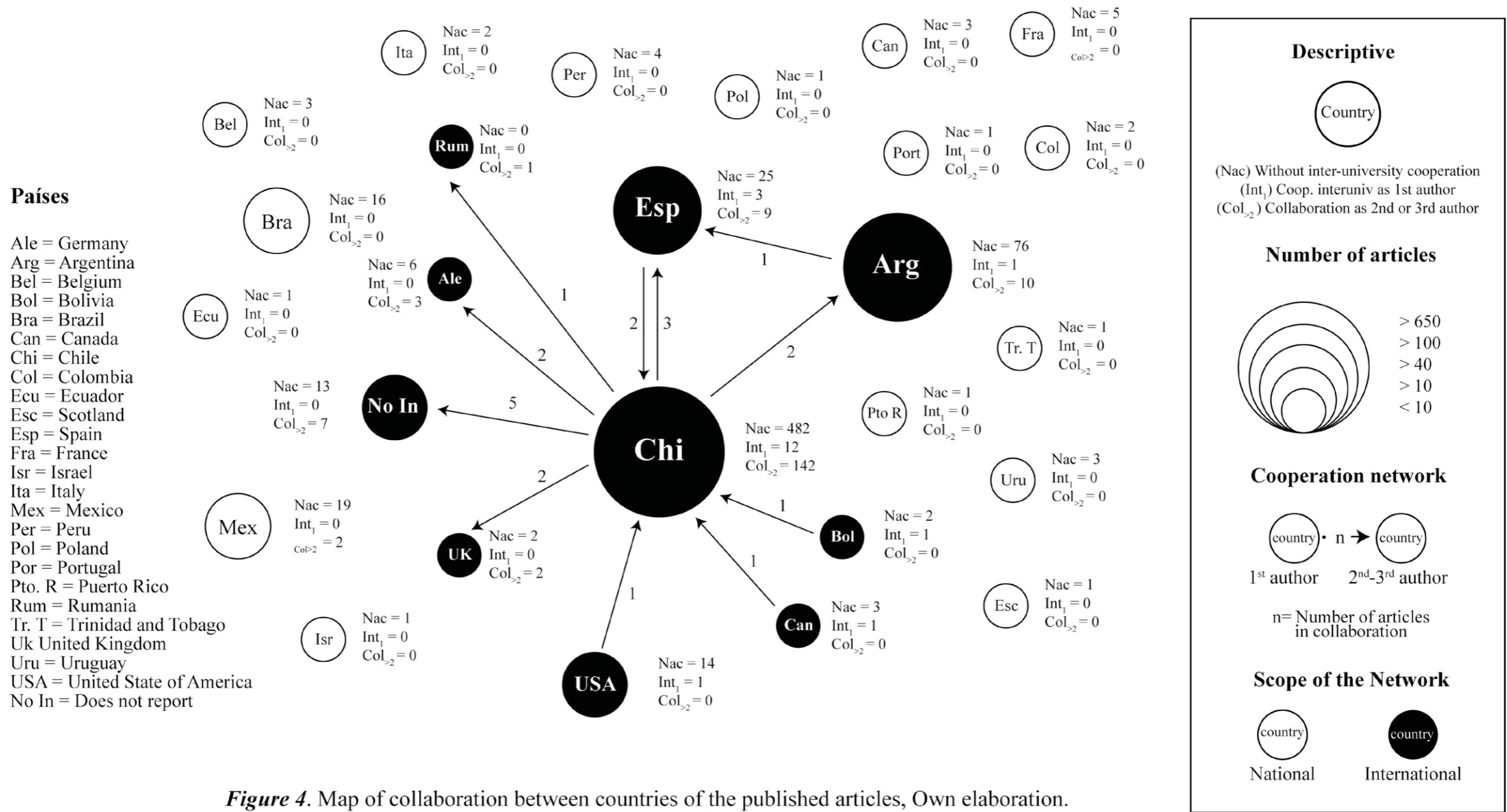


Figure 4. Map of collaboration between countries of the published articles, Own elaboration.

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