

Scientific Production and Gender Inequalities in Two Academic Elites: Brazil and Argentina

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Abstract Despite their relatively similar national contexts, geographical proximity, and comparable historical and cultural experiences, Brazil and Argentina show relevant differences in terms of R&D systems, research assessment procedures and the morphology of their academic elites. However, they share similar paths of integration to the international academic arena, along with the prevalence of nationally oriented groups under a primarily public funding system. Diverse combinations of intersectional inequalities can be found when analyzing two concrete populations of researchers from the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), given that we are dealing with highly internationalized academic elites.

In this paper, we describe the two national fields and the target populations in terms of age, position, and institutional affiliation. Considering the different composition by sex of these two populations we observe meaningful analogies regarding publication and, especially, publication in English. Finally, we discuss author positions, showing how intersectional inequalities affect women, relating this general picture to citation impact in Google Scholar and describing how gender territories are built among the top cited researchers.

Keywords: Brazil, Argentina, gender asymmetries, academic publishing, national data sources

Résumé Malgré leurs contextes nationaux relativement similaires, leur proximité géographique et leurs expériences historiques et culturelles comparables, le Brésil et l'Argentine présentent des différences notables en termes de systèmes de Recherche & Développement, de procédures d'évaluation de la recherche et de morphologie de leurs élites universitaires. Cependant, ils partagent des voies similaires d'intégration dans l'arène universitaire internationale, ainsi que la prédominance de groupes à vocation nationale dans le cadre d'un système de financement essentiellement public. L'analyse de deux populations concrètes de chercheurs du Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) et du Conselho Nacional de Desenvolvimento Científico

e Tecnológico (CNPq) révèle des combinaisons d'inégalités intersectionnelles distinctes, bien qu'il s'agisse d'élites universitaires fortement internationalisées.

Dans cet article, nous décrivons les deux champs nationaux et les populations cibles en termes d'âge, de position et d'affiliation institutionnelle. Compte tenu de la composition différente de ces deux populations en termes de genre, nous observons des analogies significatives en ce qui concerne la publication et, en particulier, la publication en anglais. Enfin, nous discutons des positions des auteurs, en montrant comment les inégalités intersectionnelles affectent les femmes, en reliant cette image générale à l'impact des citations dans Google Scholar et en décrivant comment les territoires de genre sont construits parmi les chercheurs les plus cités.

Mots-clés : Brésil, Argentine, asymétries de genre, publications académiques, données nationales

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Despite their relatively similar national contexts, geographical proximity, and comparable historical and cultural experiences, Brazil and Argentina show relevant differences in terms of R&D systems, research assessment procedures and the morphology of their academic elites. However, they share similar paths of integration to the international academic arena, along with the prevalence of nationally oriented groups under a primarily public funding system. Compared with other non-hegemonic countries, they can be considered semi-peripheral. Relative to the traditional “centers of excellence”¹ these two academic communities embody the main structural inequalities that affect the Global South: technological and digital gaps, institutional imbalances, language asymmetries, low incidence in the global indicators produced by the University Rankings, and low performance levels in mainstream journal indexing databases.

Colonial structures, class inequalities, intra-national and international asymmetries play a historical role in the paths of scientific development. But on top of these structures, specific processes of accumulation of academic capital have a direct incidence in the distribution of symbolic prestige. Several studies have observed that a systematic concentration of global recognition has gone on since the creation of the Science Citation Index in 1956 and the increasing valorization of the Impact Factor attained by the journals within research assessment systems. This bibliometric indicator was created by the Web of Science (WoS, now Clarivate) to produce a journal ranking that became a proxy for excellence. On their part, the university rankings encouraged institutions to pressure peripheral scientists to lean towards publishing in these journals and to do it in English. After the creation of Scopus (2005), an institutionalized narrative of the

¹ Ben-David, 1977.

mainstream versus *marginal* science reinforced the uses and abuses of impact indicators, whose noxious effects have been thoroughly discussed.²

Scientific researchers in the Southern Cone are highly selected elites that are active agents in the construction of their careers. They possess varied linguistic capacities and resources to develop strategies to relate to global actors and institutions, but also depend on local, regional, and national interactions. Structural limitations and room to maneuver depend on national structures such as research assessment systems, funding competitions, remuneration incentives, and available teaching positions. The Latin American publishing circuit is a highly valued asset in the social sciences and humanities, resulting in a good platform for a high-profile academic career at the national level or within the regional intellectual space. National journals in Spanish and Portuguese are fed by researchers oriented toward the accumulation of institutional prestige within their universities, which is boosted by engagement with university power. In Brazil, as we will see, national publishing is a very extensive practice, although a shift of the journals to English can partly explain this tendency, linked to the rewards offered by the national journal classification.

While most of these national, institutional, and linguistic asymmetries have been extensively discussed, race and gender inequalities have entered the studies of science more recently, accompanied by an increasing interest in observing intersectionality. Kozłowski, Larivière *et al.* have stressed how systemic barriers prevent women and other minoritized populations from gaining relevant positions into science.³ They examined the consequences of these inequalities on scientific publishing, research topics, and scientific impact, showing that the homophily between identities and topic suggests that diversity in the scientific workforce might lead to an expansion of the knowledge base. This might be even truer for the periphery, where class, nation, gender, and race are structurally entangled, thus requiring particular attention to the context of production, observing scientific trajectories as “situated knowledges.”⁴ Diverse combinations of intersectional inequalities can be found when analyzing two concrete populations of researchers from the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), given that we are dealing with highly internationalized academic elites. Race plays a significant role in the social selection observed in Brazil, while in Argentina, colonial structures are manifest in regional asymmetries that separate richly and poorly gifted institutions.

Gender asymmetries, meanwhile, seem to remain in force, following the same patterns identified globally. A recent report by Elsevier shows that, despite progress made in the incorporation of women into research bodies, in most countries, their role in publishing is improving very slowly.⁵ Men are more represented among those with a

² Guédon, 2011; Gingras, 2016; Ràfols, 2019.

³ Kozłowski, Larivière *et al.*, 2022.

⁴ Haraway, 1988.

⁵ Elsevier, 2020.

long publication record, while women are more represented among those with a short publication record. The increase in the proportion of female authors is seen mostly in feminized disciplines such as nursing and psychology, while a smaller increase is seen in the physical sciences. The authors listed in the last position (who tend to be established researchers) and corresponding authors (those who have conducted the research, have the resources and/or are in charge of the submission process) are proportionally more male than female compared to the overall population of authors in each country. Males also publish more internationally than females and those who publish internationally often have a higher number of publications and a higher citation impact. Brazil and Argentina are not an exception in terms of gender gaps in publishing productivity, and the gaps widen when publishing in English is considered. Argentina was pointed out as the country with the most gender parity in a worldwide scale, a fact that should be examined more closely by comparing different sources.

Besides the persistent historical structures of our patriarchal societies, gender asymmetries in science are nurtured by specific relations of power developed in everyday life at scientific institutes. These are manifest in the practices of direction of research teams, international funds, collaborative publishing, and authorship recognition. An unequal distribution of social capital is related to less opportunities for women to achieve academic legitimation and to access prestigious networks. The weight of personal contacts has been observed by Medina and Vessuri as a crucial factor to promote international collaboration and circulation.⁶ Not surprisingly, through the personal ties established within the masculine direction of international projects, men develop a more international career that may also translate into a successful local position.

Data sources and coverage are critical issues at stake when attempting to observe intersectional inequalities in academia. The two most renowned publishing databases (Scopus and WoS) build a landscape of the global scientific production that appears to be more developed in the North. In contrast, when other data sources are considered, multilingualism and bibliodiversity become visible.⁷ Several studies have been done with Dimensions, Microsoft Academics, and Lens. Google Scholar in particular highlights for its broader coverage, although, as it is a search engine, some shortcomings in regard to data quality and its transparency have been noted.⁸

To confront these limitations, national databases such as curriculum platforms or Current Research Information Systems (CRIS) are increasingly a remedy for partiality in studies of science. Our research builds upon this path by analyzing the bibliographic production declared by the two research bodies observed in national curriculum databases (SIGEVA, developed by CONICET in Argentina, and Lattes, managed by CNPq in Brazil).

⁶ Rodríguez-Medina, Vessuri, 2021.

⁷ Beigel, 2014.

⁸ Van Leeuwen, 2022; Martín-Martín, Thelwall, Orduna-Malea & Delgado López-Cózar, 2021; Basson, Simard, Ouangré, Sugimoto & Larivière, 2022; Doğan, 2022.

In addition, citation and collaboration for each bibliographic product was further analyzed by studying the Google Scholar citation database. All this made it possible for our empirical research to focus on the complete trajectory of a localized universe of scholars, observing production and circulation beyond the mainstream databases.

In the first part of this paper, we describe the two research bodies in terms of age, position, and institutional affiliation. Then, we discuss why and how they are comparable regarding their situation in their respective national academic spaces. Afterwards, we briefly mention the role played by research assessment systems in the attachment to mainstream standards observed in publishing practices in each country. Even if the structure and procedures of the evaluations are similar, there are significant differences in the social sciences and regarding the existence of a national classification for journals—Argentina only evaluates the national journals that apply for it. Brazil, in contrast, has developed a more encompassing grading system (Qualis), as we will see. The second part dives into one of the leading areas where gender gaps have been observed in science: publishing performance. Considering the different composition by sex of these two populations (parity in Argentina and clear masculine dominance in Brazil), we nevertheless observe meaningful analogies regarding publication and, especially, publication in English. The following section discusses author positions, showing how intersectional inequalities affect women, on top of a structural effect that makes it more likely their authorship will be pushed to intermediate positions. Finally, we relate this general picture to citation impact in Google Scholar describing how gender territories are built among the top cited researchers.

CNPq (Brazil) and CONICET (Argentina): the conditions for a comparison between two populations of researchers

The Argentinian and Brazilian academic spaces differ in several ways. Regarding R&D investment, the most recent available information (2019) indicates that Argentina invested 0.53% of its Gross Domestic Product, while Brazil informed 1.26%. However, the share of researchers in the labor force is higher in Argentina than in Brazil, the former achieving 2.92 per 1,000 employed, while the latter has only 0.7. A study of several sources (WoS, DOAJ, SciELO and Scopus) shows that Brazilians publish four times more papers than their Argentinian neighbors: 793,482 against 160,015.⁹ Concerning gender composition, the Argentinian CONICET shows a higher proportion of women researchers and, on the contrary, Brazil has a clear minority of 36%. Not surprisingly, in the Elsevier report mentioned above, Argentina stood out for the higher parity among women and men, while Brazil shared the general inequity patterns.

⁹ Moya-Anegón, Guerrero-Bote, Herrán-Páez, 2020.

Table 1: R&D investment, size of target populations and women researchers by country

	Argentina	Brazil
Total population by June 2020	44,945,502	209,585,000
Full-time researchers/ 1000 active population	2.92 (2017)	1.68 (2014)
GERD as a percentage of GDP (2017)*	0.53	1.26
N (target population)	10,619 (2020)	14,418 (2021)
Women researchers in target population	53.6% (2020)*	36% (2020)

*UNESCO, 2019.

Sources: Red de indicadores de ciencia y tecnología (RICYT), "Por país", <http://www.ricyt.org/2010/07/porpais/>; CONICET, "En cifras", <https://cifras.CONICET.gov.ar/publica/>; Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, 2018, "Dados Abertos CAPES", <https://dadosabertos.capes.gov.br/> (accessed 07/04/2023).

The empirical strategy pursued in our research was to move from the existing studies that analyze a disembodied set of publications harvested from biased databases, such as WoS or Scopus, to examining the complete research output of every researcher for each national agency. To allow for comparisons, we focused on the individuals with established academic careers and homologous research positions in their respective national spaces. The Argentinian researcher body is composed of tenured researchers at CONICET. The Brazilian group is composed by the holders of the CNPq's "research productivity fellowship." Choosing these research bodies implies observing the most productive and internationalized academic trajectories, leaving aside a large group of professors in both countries. In the case of Brazil, there is only one national system to categorize researchers. But in Argentina, two systems co-exist: CONICET and the National Research Incentive Program (PROINCE) created in 1996. This latter's last call was in 2014 and there is no current statistical-curricular data to study the group of researchers-professors that are not in CONICET but have been accredited in PROINCE. Hence, in Argentina, we are leaving aside a group of researchers who are mostly nationally oriented.¹⁰

The Argentinian agency is a public research-performing institution created in 1958. Its Scientific and Technological Researcher Career (CIC) is based on annual competitions that ensure a full-time position (only compatible with university teaching) and relative stability, and where researchers are subjected to a periodical evaluation of their publication record. It is structured in five categories of ascending hierarchy: Assistant, Adjunct, Independent, Principal, and Superior Researcher. The researchers are evaluated by disciplinary committees in charge of the peer research assessment through which funding, tenure, and promotion are decided. The researchers are distributed among scientific and technological institutes and research centers spread throughout the country. Some of these units depend exclusively on CONICET, but, in most cases, they are dual-dependent

¹⁰ Beigel & Bekerman (eds.), 2019.

units, including national universities, or less frequently linked uniquely to a university. Teaching is not mandatory, although the majority of the CONICET researchers hold a teaching position at a public university. By the time of this study, the research body was composed of 10,917 researchers, 7,765 doctoral fellows, and 2,480 postdoctoral fellows. While there is a difference in researchers' salary associated with their position in the hierarchy, there is no direct monetary compensation for publishing productivity.

In turn, CNPq is a public research-funding institution created in 1951. Unlike CONICET, it does not offer research careers with full-time positions. It nonetheless awards a prestigious so-called "productivity fellowship" (*bolsa de produtividade* in Portuguese) to a selected group of researchers. This fellowship program was created in 1976 to reward and recognize the researcher's specific commitment to research. It grants a prestigious monetary incentive to tenured researchers on a competitive basis.¹¹ It must be renewed every three or four years, depending on the level to which the researcher is classified. Like CONICET, the researchers are evaluated at CNPq by disciplinary committees that perform the peer research assessment through which funding and promotion in the program are decided. Depending on the result of this evaluation, the awardees are assigned to one of three levels: A1, Pq1 (with subdivisions), and Pq2. The monetary award varies accordingly. The awardees hold a university professorship or, less commonly, a research position in a university or research institute. Most of them work in public universities and have a tenured civil servant career that gives them stability on the job and special retirement benefits. They have a full-time position that requires them to work on research, teaching, and extension activities and they are not allowed to have other simultaneous job contracts. The denomination "*bolsa de produtividade*" creates some confusion because it does not imply an extra salary attached to publishing performance or productivity. It nevertheless provides a stipend as additional income and for those in level 1, and there is also a small grant to be spent on project development. The fellowship's prestige derives not necessarily from the monetary award that it provides, but from the recognition it bestows on its recipients as good researchers, as opposed to those who invest more time and energy on teaching and extension activities. Thus, the research output requirement in the assessment process to enter or remain in the program is usually very high. The economic reward for each category is equal for all successful researchers and it goes from R 1,100 in the initial category to R 1,500 in the senior category, around USD 215-300 per month¹². Accordingly, the Brazilian system is halfway between the strong monetary incentive system of Mexico or Chile and the prestige distribution system typical in Argentina.

¹¹ We use the term fellowship here as a translation of the original in Portuguese "*bolsa de produtividade*," its official name. This *bolsa* does not refer to a stipend assigned to young doctoral or postdoctoral students to finance their studies, but to financial support given to accredited scholars for a research project.

¹² Source: <https://www.in.gov.br/web/dou/-/portaria-cnpq-n-1.237-de-17-de-fevereiro-de-2023-465632489> (accessed 07/04/2023).

As we move on to deepen the comparison of the two target populations, several differences arise, particularly in terms of gender (sex). A historical study shows a progressive diminishment of gender asymmetries in Argentina's CONICET, especially regarding women's access to the higher categories of the research career. Comparing with the situation ten years earlier, parity is achieved in the "independent" category and this seems to be a slow but systematic tendency.¹³ Currently, as shown in tables 2 and 3, the Argentinian women researchers are a majority in the first two categories, while on the contrary, Brazil shows masculine dominance overall, not only in the higher categories. Oliveira *et al.* have studied the gender composition of the *bolsistas*, comparing publishing performance, sex, region of the institutional affiliation, and CNPq positions.¹⁴ They proved that not only the gender gap is significant but also that there is a higher concentration of *bolsistas* in the southeastern region where the most traditional universities are located.

Explanations for the gender gap must be explored in different factors intervening in career-building, such as international networks, authorship, power relations in collaborative projects, etc. In Brazil, besides, the number of fellowships awarded to the STEM areas is usually much higher than to the other areas, contributing significantly to the overall unequal distribution among sexes. The research assessment system plays a relevant role in the orientation of publishing performance and how we find gender gaps in productivity within these two populations. In Argentina, CONICET has a highly internationalized evaluative culture even if it lacks a direct monetary incentive for mainstream publishing. Academic writing in English, journal rankings, and impact indicators have a cross-cutting incidence on the indicators considered for tenure, as well as on career promotions, across all disciplines in the exact, natural, biological, agricultural, and engineering sciences. The usage of journals and citation rankings depends on each evaluation committee, and there is no local classification system for international journals. The national journals that apply for an evaluation are included in a list that some committees use. Mainstream standards also have some weight in the social sciences and the humanities. However, CONICET committees also value publication in journals included in Latin American indexing services as SciELO or Latindex-Catalog.¹⁵ An institutional decision is responsible for this, as a special CONICET regulation for the social and human sciences classifies journals indexed in the mainstream circuit on the same level as those indexed in the regional databases. As a result, applicants with articles in these journals can achieve similar scores to those with international publications.¹⁶ Even with some ambiguities, this resolution allowed many national journals to receive

¹³ Beigel *et al.*, 2018.

¹⁴ Oliveira *et al.*, 2021.

¹⁵ Beigel, 2017.

¹⁶ See Resolution N°2249/2014 <https://www.CONICET.gov.ar/bases-para-la-categorizacion-de-publicaciones-periodicas-ciencias-sociales-y-humanidades/> (accessed 07/04/2023).

**Table 2: Composition of the target populations, by position and sex.
CNPq 2021 (N=14,697), CONICET 2020 (N=10,619)**

CONICET Category	Female	Male	Total
Assistant	17.3%	11.2%	28.5%
Adjunct	20.0%	15.9%	35.9%
Independent	11.5%	11.8%	23.3%
Principal	4.4%	6.0%	10.4%
Superior	0.4%	1.5%	1.9%
<i>Total</i>	53.6%	46.4%	100%
CNPq Category	Female	Male	Total
2	21.4%	35.3%	56.7%
1D	5.9%	10.9%	16.8%
1C	3.6%	6.2%	9.8%
1B	2.8%	5.6%	8.4%
1A	2.3%	6.0%	8.3%
<i>Total</i>	36.0%	64.0%	100%

Table 3: Disciplinary composition of the target populations, by sex. CNPq 2021 (N=14,697), CONICET 2020 (N=10,619)

CONICET. Scientific Area	Female	Male	Total
Engineering and Agricultural Sciences (EAS)	18.2%	11.5%	29.7%
Biological and Health Sciences (BHS)	13.5%	12.5%	26.0%
Natural and Exact Sciences (NES)	9.2%	12.9%	22.1%
Social Sciences and Humanities (SSH)	12.7%	9.5%	22.2%
<i>Total</i>	53.6%	46.4%	100%
CNPq. Scientific Area	Female	Male	Total
Engineering and Agricultural Sciences (EAS)	5.4%	18.6%	24.0%
Biological and Health Sciences (BHS)	14.0%	15.7%	29.7%
Natural and Exact Sciences (NES)	4.6%	18.3%	22.9%
Social Sciences and Humanities (SSH)	11.3%	12.1%	23.4%
<i>Total</i>	35.3%	64.7%	100%

a significant flow of articles from CONICET researchers and fellows aspiring for tenure. So, although the evaluative culture of the agency promotes international publication, this norm, together with the lack of a salary incentive for publication in Scopus or WoS, certainly impacted on the bibliodiversity observed in the CONICET's production. Of the complete corpus in SIGEVA, 21.5% of the total publications were published in Argentina, 7.4% in Latin America, and 60.3% in other countries (no data for the remaining 10.8%).¹⁷

Like CONICET, the CNPq's evaluation committees also uses journals' rankings to evaluate the researchers bibliographic production. Unlike CONICET, though, it uses the so-called Qualis system, which classifies national and international publications. Journals are classified in ordinal strata with A1 being the highest, followed by A2, B1, B2, B3, B4, B5, and C, the least valued.¹⁸ The vast majority of the CNPq's evaluation committees use the journal impact factor as an indicator to establish quality of a published article. According to the available documents, the only areas that do not use impact indicators are anthropology/archaeology, education, architecture, urbanism, and arts/music.¹⁹ Barbería, Barboza and Godoy point out a direct correlation between the scores given to a journal in a given year and its score in the following evaluation.²⁰ This means that, in general, the impact indicators are noted and then consecutively replicated up to the present, not necessarily reflecting these journal's current situation. It should be noted that Brazil has many journals indexed in international services, such as Scopus and WoS, and hundreds of journals indexed in SciELO. Mugnaini, Damaceno, Digiampietri and Mena-Chalco analyzed the complete list of publications of 260,663 Brazilian researchers and showed that national journals occupy an important portion of the publications in all areas.²¹ However, this tendency towards national publication accompanies a systematic transition of many Brazilian journals to including both Portuguese and English versions of their articles.

Language and gender gaps in publishing productivity

The structural differences mentioned above between the scientific fields in Brazil and Argentina and the diverse morphological composition of these two populations do not, nevertheless, prevent us from observing important analogies in terms of gender asymmetries when we compare levels of productivity, and especially when we take into account the language of the publications. The novelty of the present study, which made collecting the data so complex, is that it compares two complete corpuses of production and not segments or samples of documents extracted from international

¹⁷ Beigel, Gallardo, 2021.

¹⁸ Martínez-Ávila, 2019.

¹⁹ CNPq, 2020.

²⁰ Barbería, Barboza, Godoy, 2018.

²¹ Mugnaini, Damaceno, Digiampietri, Mena-Chalco, 2019.

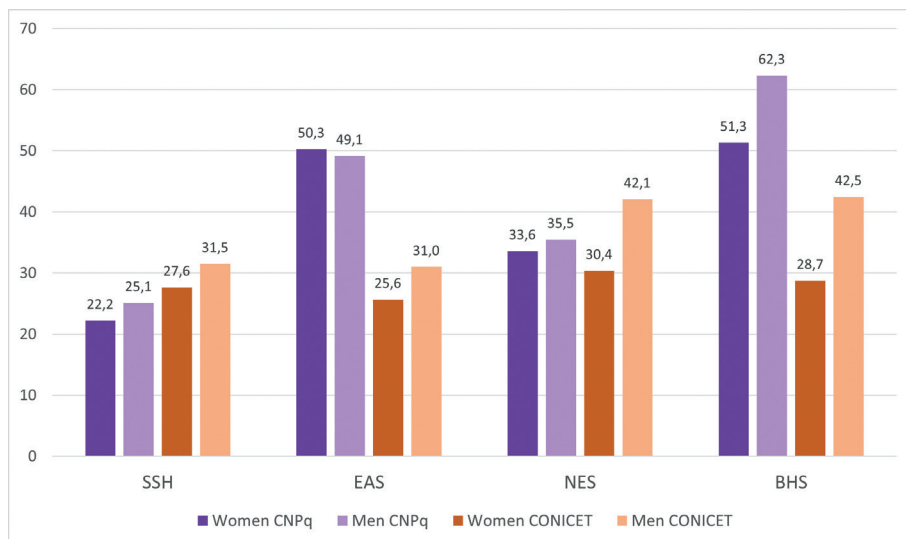
databases, methods that both have their biases and limitations. We analyzed the total bibliographic production declared by the Brazilian researchers in the Lattes system and the total bibliographic production declared by the Argentine researchers in the SIGEVA system. For the population of CNPq researchers, it was not possible to work on complete publication trajectories because it was an enormous data set that made processing unmanageable, so a shorter time period was selected for harvesting. The only difference in the datasets is that the information on the place of publication was not available for Brazil, whereas it was included for Argentina.

A comparison of the two lists of publications, one belonging to a Portuguese-speaking population and the other to Spanish-speaking one, shows the average number of articles published by each researcher, according to gender and discipline (see figure 2). The first feature that emerges is the higher productivity of researchers from CNPq compared to CONICET in all areas except for the social sciences and humanities (SSH). Comparing the gender gaps, in the case of Argentina, the productivity of men is higher than that of women in the four major disciplinary areas. This trend is accentuated for biological and health sciences (BHS) and natural and exact sciences (NES). In Brazil, the same occurs in three areas, and it is in biological and health sciences where the greatest difference is found. In both countries, biological and health sciences are an area largely composing of women, while in the natural and exact sciences, male researchers are prevalent. The only exception is the Brazilian area of engineering and agricultural sciences (EAS), where female productivity is slightly higher than male.

The publication of books follows a different pattern from that of journal articles. CNPq women researchers published an average of 1.9 books each in all areas, while male researchers exhibit an average of 1.5. In the case of book chapters, the values are 7.6 and 5.5, respectively. The social sciences dominate these trends over the other areas, and the data also suggests that women appear slightly more inclined to the book format. But, for the total population, regarding books, the differences are minimal; the average number of book chapters in the male population is 6.1 and, for books, 1.7, while in the female population it is 6 for chapters and 1.4 for books. If we separate the area of social sciences and humanities, a larger gap appears and is more accentuated. Among researchers in this area, the average for male researchers is 5.7 books each, while the average for female researchers is 4.2. In this paper, we do not delve into the particular features of authorship in indexed books, where larger gender asymmetries can be found. A study on the Scholarly Publication Index (Q1) proved that only 18% of the first authors for books published in Spain are women.

Let us delve now in the language asymmetries in publishing performance. The ability to write and publish in a language other than one's mother tongue is closely linked to discipline and the geographical affiliation of individuals. For example, a researcher affiliated with a university in the United States, or the United Kingdom has a competitive advantage, a greater facility to publish in the English-language

Fig. 1: Accumulated average of articles per researcher for CONICET (Argentina) and CNPq (Brazil), by sex and scientific area, CNPq 2021 (N=14,697), CONICET 2020 (N=10,619)



journals included in mainstream databases, given his or her command of English as a native language and his or her academic training in that language. By contrast, for a Chinese, Russian or Colombian researcher, publishing in English implies an intense learning process, as well as additional review and translation time, not to mention the need to adapt to certain debates and a literature that does not match the map of her previous readings, also in English. Several studies have shown that writing in English does not arise simply from the deployment of basic communication skills, but rather from a broader set of linguistic abilities.²² Gerhards argues that the “transnational linguistic capital”—the maximum accumulation of which is reported by English—is not merely acquired through the typical training of primary socialization.²³ Technical mastery of the language also requires academic training and the intervention of editors or native collaborators who correct or translate, access to which is defined according to the academic and the social capital of the research teams and their international networks.²⁴ The accumulation of these resources and the viability of acquiring the means to write in English explain unequal circulation registered among academics from the same country and the same discipline, but can also reinforce gender asymmetries.

²² Lillis, Curry, 2010; Chardenet, 2012.

²³ Gerhards, 2014.

²⁴ Beigel, 2017.

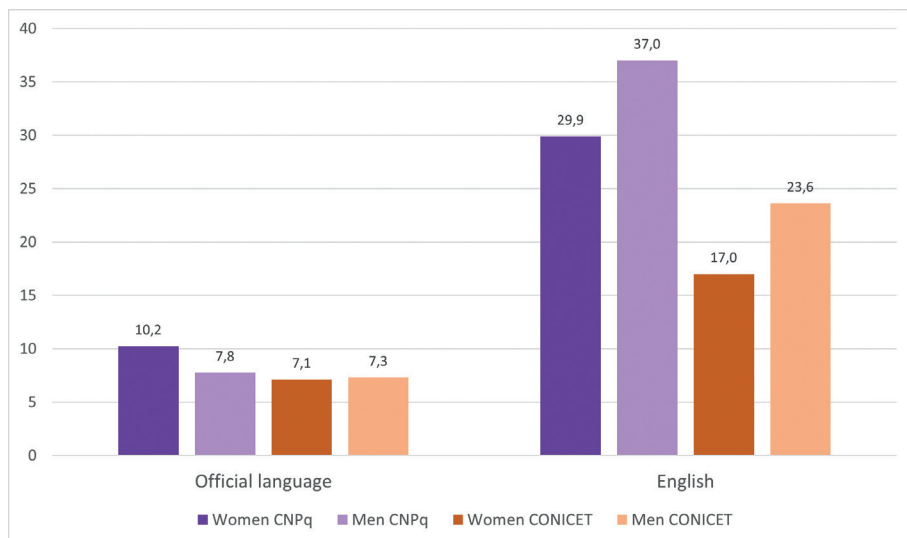
This transnational linguistic capital plays a key role for entry or permanence in a mainstream academic circuit. However, other structures define the “room to maneuver” that researchers from non-hegemonic countries have for writing in their native languages. We are referring to tenure criteria and institutional policies that focus their evaluation indicators on the impact factor of journals rather than on assessing the quality/originality of each article published or candidate profile. Journal rankings and university rankings have had a deleterious effect on the multilingualism of scientific production, twisting publication strategies around English-language journals. Another direct effect is the devaluation of national journals, which frequently lose community support and institutional endorsement, closing scientific communication organs that link universities more directly with their environment and encourage them to develop socially relevant knowledge. This has even led many journals to change their native language to English—a phenomena with particularly incidence in Brazil.²⁵

English language predominates when we observe performance in articles; the proportion is higher in the case of researchers from Brazil, where articles in this language represent 79% of the total, while in Argentina, they represent 64% of the total. Analyzed by sex, publication language shows clear asymmetries in favor of a higher average number of articles in English for men in both populations. Figure 3 shows that this asymmetry is proportionally higher for the Brazilian case. In the graph, the label “official language” represents the average number of publications in Portuguese for the CNPq case and Spanish for the CONICET. In Argentina, we see almost exact parity between men and women. But there is a marked difference in the average number of articles in Portuguese for CNPq female researchers compared to their male colleagues. When the complete curricula vitae of the individuals are analyzed, despite the strong symbolic weight of English and its rewards in research assessment, a significant presence of publications in the national language emerges. This turns out to be the case in all scientific areas, and with significant publications in national journals, which leads to the emergence of more diverse profiles than expected in these two internationalized academic elites with full integration in mainstream circuits.

Considering specific performance in each disciplinary area, in the social sciences and humanities, articles in English are in the minority, which is smaller for Argentina (less than 20%). In comparison, in the case of Brazil it represents 25% of the total. Interestingly, for the hard sciences in Argentina, the proportion of publications in Spanish tend to increase in the lower career categories, i.e., in the younger generations. Meanwhile, in the higher categories, composed of older, more established groups of researchers, the proportion of articles in English is inversely higher. Among young people in the social sciences and humanities, there is a significant and growing

25 Beigel *et al.*, 2022.

Fig. 2: Accumulated average of articles per researcher for CONICET (Argentina) and CNPq (Brazil), by sex and language. CNPq 2021 (N=14,697), CONICET 2020 (N=10,619)

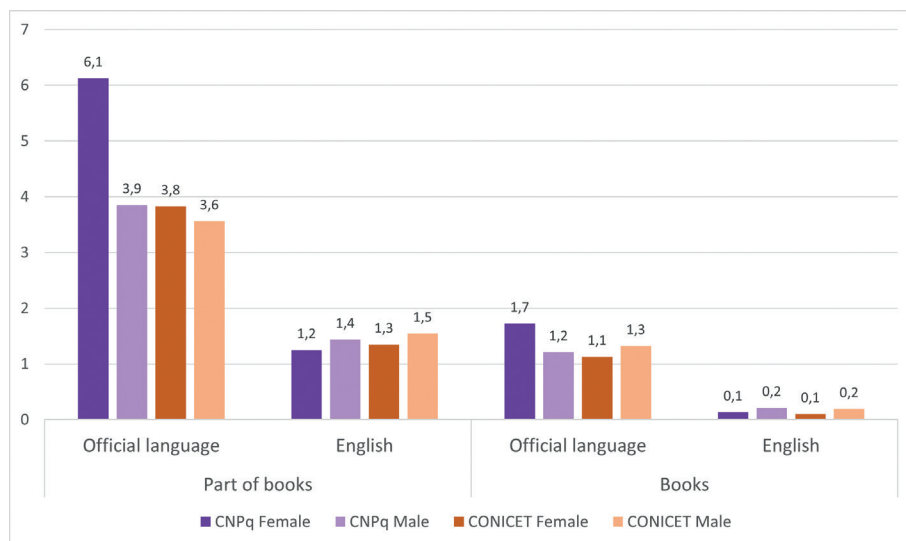


tendency to publish in Argentina, mainly driven by the specific regulations approved by CONICET, as mentioned previously. Moreover, in that country, most of the national journals are indexed in Latindex Catálogo which is accepted in top 1 scores for tenure and promotion. Engineering and agrarian sciences also stand out in both countries with a greater presence of articles in the national language, compared with biology, health, and exact and natural sciences.

This survey on the complete productions of an academic community makes it possible to verify language gaps in other communication formats, such as books, conference proceedings, and reports, which continue to have an impact on the publication practices of researchers. Let us now see how the language situation is reversed when we consider chapters and parts of books, mostly published in the researchers' national official language. As shown in figure 3, although the productivity of book chapters for female CNPq researchers was higher than that of males, this difference corresponds to the chapters published in Portuguese. In the case of English, although slightly, the trend is reversed, with men producing more book chapters. For books, the situation is the same. Something similar happens for CONICET: for book chapters written in Spanish, the average productivity is practically the same, with a slight advantage for women, which is reversed in the case of English. As for books, there is a male predominance in both languages.

For Argentina, book chapters in Spanish represent 61%, while for authored/edited books the figures increase to 79%. For CNPq researchers, book chapters in Portuguese represent 74%, while authored/edited books in that language rises to 85%. The presence of other languages is minimal in all types of publication: only in the social sciences

Fig. 3: Accumulated average of Books and chapters per researcher, by sex and language. CNPq 2021 (N=14,697), CONICET 2020 (N=10,619)



and humanities does it has some relevance. At CONICET, in these disciplines, the publication of books or chapters in English is in the minority, and in Brazil it is even more so. A higher incidence of English in books and chapters is observed for both countries in the natural and exact sciences.

Conversely, in the agricultural and biological sciences, Argentina has a higher percentage of books in English than Brazil. Overall, it can be said that Brazilian and Argentine researchers, when they publish in book format, do so mostly in their language. In contrast, book chapters in English have a significant presence in the “hard” sciences, with a higher incidence in Argentina than Brazil. In sum, the preceding figures reaffirm the gender gaps noted in the previous section. In the two populations analyzed, there is greater male productivity, which is accentuated when the format (article) and language (English) are disaggregated. This combination provides greater rewards for academic careers in the current competitive framework in both countries, however these choices do not imply better-quality contributions to science.

Collaboration, authorship, and citations

Bibliometric studies here are limited to sex-binary analysis. In addition, the disciplinary fields have different modalities for valuing the author order. For the social sciences and humanities, the first author may be considered the most important intellectually, although it is frequent for research groups to decide authorship in alphabetical order. Single authorship is also relevant in this field. Conversely, in most of the “hard” sciences,

collaborative authorship is the most extended, and the first author is a relatively young person who has been responsible for the experiment, while the last is the most established researcher. Several studies support that for the “hard sciences”, the analysis of the first author is valid for cross-sectional comparisons because this is considered the one who contributes most to the research.²⁶ In any case, in those disciplines where it is standard practice to introduce the head of the laboratory or team leader at the end, a specific study of institutional power relations should be carried out since co-authorships or citations would not shed much light on these processes.

According to the available literature, gender differences in co-authorship and citations result from the difference in productivity observed globally, throughout the different career stages and for the vast majority of disciplines.²⁷ Although the gap in the number of articles published by men and women is variable, and there is more parity concerning the publication of book chapters, the distance remains relevant, with the consequences that this can have on the construction of academic careers and recognition. Aksnes, Piro, and Rørstad analyzed the complete publication trajectories of professors from four Norwegian universities among all disciplines.²⁸ Based on measurement by co-authorship, they concluded that 56% of female researchers participate in international collaboration, compared to 66% of males. International collaboration occurs more frequently in the natural sciences, medical and health sciences, and technology than in the humanities and social sciences, which is true for both genders. The study concludes that there are relatively more women in fields where collaboration rates are lower.

The observation of gender asymmetries within co-authorships was not feasible for this study because data on the sex of the co-authors were not available. Nevertheless, the number of authors was collected, and the position of the researchers from our target populations was located for each publication. Considering only articles, collaboration is more widespread among CNPq researchers than for CONICET researchers in all areas (see table 4), although in engineering and agricultural sciences, the difference is less accentuated. It is noticeable that single-authored articles are scarce in the case of the CNPq population (3.7%), but in the case of CONICET they exceed 10% in total, and in the social sciences and humanities, are two times higher than they are in Brazil. In addition to the disciplinary traditions of each country, in this case, we can point out that evaluative cultures also play a role. In Argentina, many social sciences and humanities' evaluative committees explicitly punish multiple authorship, both by deducting scores for articles with more than three authors or by requiring single authorship as indispensable for promotion to higher categories.²⁹ A “principal” authorship requirement

²⁶ Larivière, Desrochers, Macaluso, Mongeon, Paul-Hus, Sugimoto, 2016; Thelwall, Abdoli, Lebedziewicz, Bailey, 2020.

²⁷ Holman, Devi Stuart-Fox, Hauser, 2018; Lindsey 2016; Mauleon, Bordons, Oppenheim, 2008.

²⁸ Aksnes, Piro, Rørstad, 2019.

²⁹ CONICET, 2021.

appears among some CNPq evaluation committees such as Architecture and Urbanism, Demography, Geography, Urban and Regional Planning, and Tourism/History/Linguistics. Highly numerous authors in collaborative articles are explicitly discouraged.³⁰

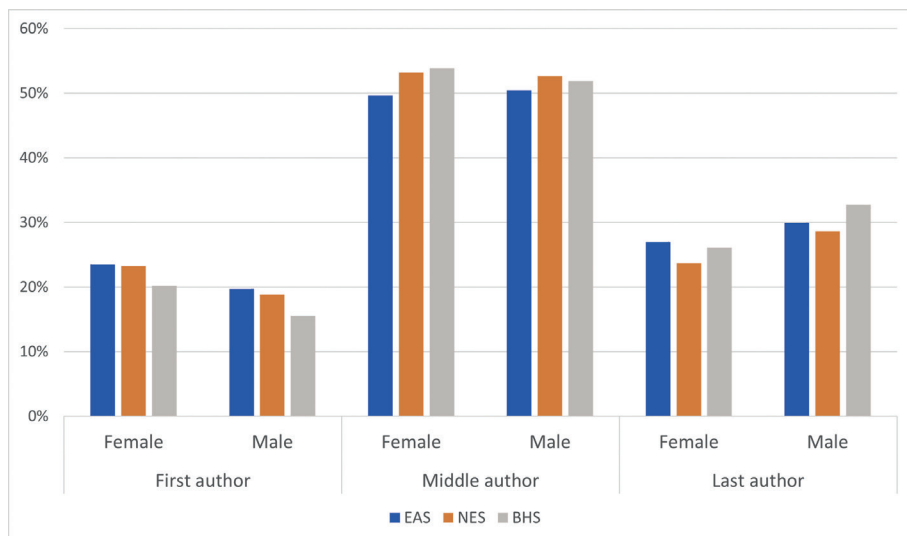
Table 4. Average number of authors by article, and share of single-authored articles, by country and discipline. CNPq Brazil n=14,697, CONICET Argentina n=10,619

Scientific area	Average number of authors per article		Single authorship articles	
	Brazil	Argentina	Brazil	Argentina
EAS	5.8	5.0	0.4%	2.0%
BHS	7.2	4.0	1.0%	1.1%
NES	5.7	3.2	1.6%	2.4%
SSH	2.7	1.6	22.3%	48.4%
Total	5.9	4.9	3.7%	10.2%

Author positions indicate different rewards for research assessment, prestige-building and social capital that enable new collaborations. For this research, three positions are of interest: the first and the last, traditionally considered leading roles, and the intermediate positions, all equally of minor importance. The first place usually indicates that this person is responsible for executing the tests or/and the empirical procedure that led to the published findings. The last position generally corresponds to the “senior” person or project manager, who signs off on the work but is not always directly involved. However, our observations of evaluation processes in different areas have verified that holding this position is a prerequisite for promotion to higher categories. Therefore, the intermediate positions (including all positions except the first and last) will be considered as an indicator of subalternity in the authorial attribution, and consequently less efficient in the different forms of legitimization provided by a scientific publication regarding research positions, access to funding, or academic mobility.

To present this landscape clearly, we separate both countries into different figures, and we leave aside the social sciences and humanities. Beginning with CONICET, figure 4 shows the distribution of the positions (first, last, or intermediate) for all articles in the CONICET population, according to sex and major field. The intermediate position is dominant in all areas (around 50% of the total authorship considered). It can also be noted that occupying the first position is more common among the articles written by women than by men in all areas. Meanwhile, men tend to sign a higher proportion of their articles as the last author than women. For the intermediate position, there is almost an equilibrium for men and women, but these intermediate positions are dominant in the authorship observed—a feature that can be attributed to the general

Fig. 4: CONICET—Author position in articles, by sex and scientific area (social sciences and humanities excluded) (N=8,264)



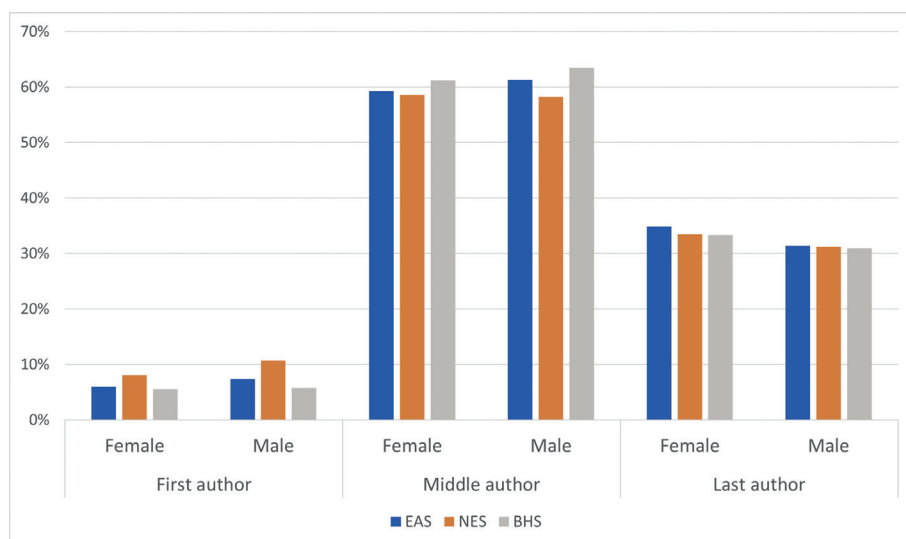
Note: The columns by sex and scientific area add up to 100%.

structure of the non-hegemonic position of this academic community, and, as we will see below, the same is valid for Brazil.

The author's positions are different in the case of the CNPq researchers. Figure 5 shows that the intermediate position is more predominant and occupies a larger portion of the total number of authorships analyzed (almost 60% of the total author positions). The main difference is found in the first authorships, which are much lower than those of CONICET, an element that can be explained by the age composition of the Brazilian researchers. It can be concluded that occupying the first position is more frequent for EAS and NES males. Strikingly, in biology and health sciences, which is a predominantly female population, inversely, the highest values of intermediate positions are found. The last positions count for more than 30% of the total, probably fed by the criteria for permanence in the CNPq system of *bolsistas*, which widely increases age in higher categories. This higher participation in the last positions may be due to the more significant presence of Brazil in the management of international projects. In terms of gender, unlike what we observed for CONICET, the last authorships are occupied by women slightly more, although the differences found in the biology and health sciences are not representative of the share of women in this population, where the gap was wider than in the other disciplines.

Now let us put the asymmetries in productivity in relation with author positions and citations. We did this study in Google Scholar, exploring a database that could compensate for the linguistic and geographical limitations and biases of Scopus and Web of Science. Due to its amplitude and more extensive coverage of books and publications

Fig. 5: CNPq—Author position in articles, by sex and scientific area (N=11,222)



Note: The columns by sex and scientific area add up to 100%.

Table 5: Brazil—Top 1% most cited CNPq researchers in Google Scholar, by sex, scientific area and average citations (N=149)

Scientific Area	Researchers in top 1%	Women in top 1%	% Women in Area	Average citations Men in top 1%	Average citations Women in top 1%
EAS	36	14%	22%	8,063	4,969
BHS	44	27%	47%	18,185	24,343
NES	34	24%	20%	25,688	22,837
SSH	35	37%	49%	3,609	3,101

indexed in regional databases, the Google Scholar database offers an exciting landscape for studying the two populations under scrutiny. The main findings point to male dominance of the top citation groups, showing a large gap between the participation of women and the demographic composition of the population. Only the social sciences and humanities exhibit more robust citation for women, although it is still far from their weight in the Argentine universe of researchers. Compared with the top citation universe of Argentina, the top 1% of most-cited Brazilian researchers exhibits much more average citations, even when the lifespan of the articles is shorter.³¹ Table 5 shows that in the case of CNPq researchers, women are proportionally less cited than men

³¹ The top 1% most cited is influenced by a group of highly cited articles. In other papers we have broadened the analysis to the top 10%.

within the top 1% of most cited researchers in all areas. Moreover, men always have more citations than women in EAS, which is also the case in NES and SSH, although the difference is less extreme. The reverse is observed in BHS where women are more cited, but still less than men if compared their participation in the research body.

In table 6, we can see that CONICET women researchers in the top 1% are a minority, although with relatively higher participation than in the Brazilian case. A positive effect of the growth in the participation of women in this population seems to be acting over time. However, the Argentine case clearly shows the distance between the increase in female participation in the population and its impact in terms of citation impact. The area where this is observed at its extremes is biological and health sciences (the proportion of women in this area is triple that of women in the top 1% most cited). Only in social sciences and humanities is this distance attenuated, but the proportion of women is still lower proportionally because women represent 58% of the population and 52% of the top-cited.

Table 6: Argentina—Top 1% most cited CONICET researchers in Google Scholar, by sex, scientific area and average citations (n=104)

Scientific Area	Researchers in top 1%	Women in top 1%	% Women in Area	Average citations Men in top 1%	Average citations Women in top 1%
EAS	27	26%	52%	1,356	1,293
BHS	31	19%	61%	2,081	2,763
NES	23	22%	41%	7,815	6,503
SSH	23	52%	58%	1,003	809

The average number of citations in the top 1% is higher for men than for women in EAS and NES, although with smaller differences for Argentina. As in Brazil, the exception is biological and health sciences but, in this case, the positive advantage of women is small compared their large share of the population (61%).

Discussion and final remarks

This paper aimed to observe the gender asymmetries present in the publishing performance of two bodies of researchers belonging to CONICET (Argentina) and CNPq (Brazil). In the structural comparison, an important difference between the two countries stood out. In the CNPq system, women are notably a minority, while in the Argentine agency, women are a majority, but masculine predominance can be observed in the two highest categories. This indicates a trend favorable to the advancement of women in CONICET careers, against a structural asymmetry observed for Brazil.

Our departure point was the need to move from analyzing a corpus of articles captured in mainstream databases towards observing these groups of researchers in their national scientific-university field. This drove us to take advantage of the richness of the national curriculum databases and alternative databases like Google Scholar. Productivity—understood as average articles published by individual researchers—was discussed in terms of differences in a publication language. In both populations, English predominated in journal articles. The weight of English was higher for the researchers from Brazil than for those from Argentina, 79% and 64% of the total number of publications respectively. As expected, this linguistic distribution changes according to scientific area. We made special mention of the specificity of the social sciences and humanities, where articles in English represent a minor portion compared to the other areas—for Argentina, it was below 20%, while in the case of Brazil it represented 25% of the total. It is interesting to note that, in Argentina, in the “hard” sciences, the proportion of publications in Spanish tends to increase in the lower career categories, that is, in the younger generations. Among young people from CONICET, a growing trend towards publication in the national language was also observed in Argentina, driven mainly by the social sciences and humanities and by the specific evaluation regulations set by the organization.

Regarding gender asymmetries, productivity shows the same trends that have been documented at a global level indicating a greater volume of production for men. When the linguistic variable is introduced, this gap is reinforced in all scientific areas: the comparison of the average of articles published in English results in the already well-known balance favorable to male production in that language. For Argentina, on average for all researchers, men published 23.6 articles in English while women published 17. In Brazil, we observed a similar phenomenon: the average for all-male researchers is 37 articles in English, and only 29.8 for women. The distances between the sexes triple in Brazil within the exact and agrarian sciences. In contrast, for the biological sciences and the social sciences and humanities the gap is smaller, evidencing the growing participation of women in these disciplines.

Having confirmed the trends towards a gender gap favorable to men in terms of productivity and showing how this asymmetry is reinforced when publications in English are analyzed, we proceeded to analyze the performance of this population in terms of circulation. In other words, beyond the verification of the lower number of publications by women, we asked ourselves: is there a directly proportional relationship with the gender gap in terms of academic legitimacy as measured by citation numbers? For the study of citations and patterns of international collaboration, this research analyzed the complete corpus of articles from the two research bodies using Google Scholar, with the collaboration of the COLAV (University of Antioquia, Colombia), which has been developing bibliometric studies for several years, to conduct the process.

The construction of two databases with the metadata of all the articles of each population and their citations allowed us to observe the behavior of the elite of each disciplinary area and the place of women within the top 1% most cited in this database. Gender asymmetries are analyzed in these citation territories compared to the morphological composition of each sub-population by scientific area. A relevant distance is marked between the increase of the participation of women among the staff of each campus and the participation of women in the recognition provided by the publications. Gender biases in collaborative relationships can be even more radical and still more invisible, as female researchers are frequently denied or relegated among the less well-placed authors of an article.³² What has been called “ghost” authors is a practice that affects not only women but also young people.³³

This becomes especially problematic in certain disciplines, like in biomedicine, a field in which one paper out of five includes ghost authorship. Larivière, Pontille and Sugimoto studied the author’s credit description section of the Plos ONE platform and demonstrated a nuanced gender division of labor regarding the writing of the original draft and the review and editing.³⁴ These asymmetries are not only present in the author’s attribution of an article. The study by Smith, Jones, Master *et al.* demonstrates that authorship disputes are part of competitive dynamics, and such disagreements systematically affect women in collaborative teams.³⁵

The gender productivity gap, supported by a greater number of publications by men, has been observed in all research fields globally. However, it has been less studied if this productivity implies necessarily that men have a more significant impact. Chatterjee and Werner highlight that in health sciences and biomedicine, papers with female first authors have one-third fewer citations than those with male first authors.³⁶ Furthermore, papers with female lead authors received a about 25% fewer citations than those with male lead authors. Papers whose first and principal authors were both females received half as many citations as papers whose first and principal authors were both males. Analyzed diachronically, however, these citation gaps between men and women are narrowing where affirmative action is developed. For example, institutional offices and networks have been launched at CONICET for the struggle against sexual harassment and labor violence. Parity requisites have been decided for the constitution of academic panels in official scientific meetings and in the constitution of the evaluation committees for tenure and promotion.

The different conditions for scientific production offered by the Argentine and Brazilian research systems, diverse in their modes of legitimizing this production, have

³² Ni, Smith, Yuan *et al.*, 2021.

³³ Sismondo, 2009; Giry, Gingras, 2016.

³⁴ Larivière, Pontille, Sugimoto, 2021.

³⁵ Smith, Williams-Jones, Master *et al.*, 2019.

³⁶ Chatterjee, Werner, 2021.

a relevant incidence in researchers' career-building and the asymmetries observed. A profound critique of global databases becomes a priority, and new data sources must be explored to provide new inputs for the research assessment systems in each country. Applying a critique of mainstream bibliometrical indicators is essential. A thorough insight into academic gender inequalities requires a passage from a corpus of published articles to corporality, concrete trajectories anchored in local, national, and global interactions. Empirically, this change of focus drove us to adopt a methodological framework beyond traditional bibliometrics and move to adopt prosopography. This paper shows the results of our preliminary steps in this direction. But we need more qualitative studies to observe these complex and multifaced asymmetries in concrete life histories, daily life at research teams, and power relations within scientific institutes. As Mary Wollstonecraft argued, it is not enough that women become considered equals to enter the system, their entrance must radically question the dominant criteria for the valorization of knowledge.³⁷ We hope that studies with a perspective on circulation and situated knowledge will contribute, eventually, to the democratization and diversification of scientific production.

³⁷ Rietti, Maffia, 2005, 8.

Bibliography

- Aksnes, D. W., Piro, F. N., Rørstad, K.**, 2019, "Gender Gaps in International Research Collaboration. A Bibliometric Approach", *Scientometrics*, 120 (2), p. 747-774.
- Barberia, L. G., Barboza, D. P., Godoy, S. R.**, 2018, "Expert-Driven and Citational Approaches to Assessing Journal Publications of Brazilian Political Scientists", *Brazilian Political Science Review*, 12 (1), DOI: 10.1590/1981-3821201800010004.
- Beigel, F.**, 2014, "Publishing from the Periphery. Structural Heterogeneity and Segmented Circuits. The Evaluation of Scientific Publications for Tenure in Argentina's CONICET", *Current Sociology*, 62 (5), p. 743-765.
- Beigel, F.**, 2017, "Científicos periféricos, entre Ariel y Calibán. Saberes institucionales y circuitos de consagración en Argentina: las publicaciones de investigadores del CONICET", *DADOS, Revista de Ciências Sociais*, 60 (3), p. 825-865
- Beigel, F., Bekerman, F.** (eds.), 2019, *Culturas evaluativas. Impactos y dilemas del Programa de Incentivos a Docentes-Investigadores en Argentina (1993-2018)*, Buenos Aires, CLACSO-CONADU.
- Beigel, F., Gallardo, O., Bekerman, F.**, 2018, "Institutional Expansion and Scientific Development in the Periphery. The Structural Heterogeneity of Argentina's Academic Field", *Minerva. A Review of Science, Learning and Policy*, 56 (3), p. 305-331.
- Beigel, F., Gallardo, O.**, 2021, "Productividad, bibliodiversidad y bilingüismo en un corpus completo de producciones científicas", *CTS, Revista Iberoamericana de Ciencia, Tecnología y Sociedad*, 16 (46), p. 41-71.
- Beigel, F., Packer, A., Gallardo, O., Salatino, M.**, 2022, "OLIVA. La producción científica indexada en América Latina. Diversidad disciplinar, colaboración institucional y multilingüismo en SciELO y Redalyc (1995-2018)" *DADOS, Revista de Ciências Sociais*, 67 (1), DOI: 10.1590/dados.2024.67.1.307.
- Ben-David, J.**, 1977, *Centers of Learning. Britain, France, Germany, United States*, 1st ed., New York, Mc Graw-Hill.
- Chardenet, P.**, 2012, "Langues et savoirs. Perceptions et réalités du capital linguistique dans la circulation des connaissances", Coloquio Circulación Internacional del Conocimiento, CINVESTAV-IIESU, México.
- Chatterjee, P., Werner RM**, 2021, "Gender Disparity in Citations in High-Impact Journal Articles", *JAMA Netw Open*, 4 (7), DOI: 10.1001/jamanetworkopen.2021.14509.
- CNPq**, 2020, *Crerios Definidos Pelos Comitês de Assessoramento 2021-2023*, online: https://www.udesc.br/arquivos/udesc/id_cpmenu/13718/Criterios_consolidados_PQ2022_16522010187249_13718.pdf (accessed 04/04/2023).
- CONICET**, 2021, *Criterios de evaluación para solicitudes de promoción dentro de la carrera del investigador científico y tecnológico de CONICET*, Gerencia de Evaluación y Planificación, online: <https://convocatorias.conicet.gov.ar/wp-content/uploads/sites/3/3-CRITERIOS-DE-EVALUACION.pdf> (accessed 04/04/2023).
- Doğan, G.**, 2022, "Google Scholar as a Data Source for Research Assessment in the Social Sciences", in Engels, T. C., Kulczycki, E. (eds.), *Handbook on Research Assessment in the Social Sciences*, Cheltenham, Edward Elgar Publishing, p. 162-180.
- Elsevier**, 2020, *The Researcher Journey Through a Gender Lens. An Examination of Research Participation, Career Progression and Perceptions across the Globe*, online: https://www.elsevier.com/__data/assets/pdf_file/0011/1083971/Elsevier-gender-report-2020.pdf (accessed 04/04/2023).
- Gerhards, J.**, 2014, "Transnational Linguistic Capital. Explaining English Proficiency in 27 European Countries", *International Sociology*, 29 (1), p. 56-74.

- Giry, J., Gingras, Y.**, 2016, "David Pointille, Signer ensemble. *Contribution et évaluation en sciences*, Economica, Paris, 2016, 208 p.", *Sociologie du travail*, 60 (2), DOI: 10.4000/sdt.1912.
- Gingras, Y.**, 2016, *Bibliometrics and Research Evaluation. Uses and Abuses*, Cambridge (Massachusetts), The MIT Press.
- Guédon, J.-C.**, 2011, "El acceso abierto y la división entre ciencia 'principal' y 'periférica'", *Crítica y Emancipación*, (6), p. 135-180.
- Haraway, D.**, 1988, "Situated Knowledges. The Science Question in Feminism and the Privilege of Partial Perspective", *Feminist Studies*, 14 (3), p. 575-599, DOI: 10.2307/3178066.
- Holman, L., Stuart-Fox, D., Hauser, C. E.**, 2018, "The Gender Gap in Science. How Long until Women Are Equally Represented?", *PLoS Biology*, 16 (4), DOI: 10.1371/journal.pbio.2004956.
- Kozłowski, D., Larivière, V., Sugimoto, C. R., Monroe-White, T.**, 2022, "Intersectional Inequalities in Science", *Proceedings of the National Academy of Sciences*, 119 (2), DOI: 10.1073/pnas.2113067119.
- Larivière, V., Desrochers, N., Macaluso, B., Mongeon, P., Paul-Hus, A., Sugimoto, C. R.**, 2016, "Contributorship and Division of Labor in Knowledge Production", *Social Studies of Science*, 46 (3), p. 417-435, DOI: 10.1177/0306312716650046.
- Larivière, V., Pontille, D., Sugimoto, C. R.**, 2021, "Investigating the Division of Scientific Labor Using the Contributor Roles Taxonomy (CRediT)", *Quantitative Science Studies*, 2 (1), p. 111-128, DOI: 10.1162/qss_a_00097.
- Lillis, T., Curry, M. J.**, 2010, *Academic Writing in a Global Context. The Politics and Practices of Publishing in English*, London, Routledge.
- Lindsey, L. L.**, 2016, *Gender Roles. A Sociological Perspective*, 6th ed., London, Routledge/Taylor & Francis Group.
- Martínez-Ávila, D.**, 2019, "Qualis Periódicos. El sistema brasileño de evaluación de revistas", *Anuario ThinkEPI*, 13, DOI: 10.3145/thinkepi.2019.e13e01.
- Mauleon, E., Bordons, M., Oppenheim, C.**, 2008, "The Effect of Gender on Research Staff Success in Life Sciences in the Spanish National Research Council, Research Evaluation, 17 (3), p. 2013-225, DOI: 10.3152/095820208X331676.
- Mauleon, E., Hillán, L., Moreno, L., Gómez, I., Bordons, M.**, 2013, "Assessing Gender Balance among Journal Authors and Editorial Board Members", *Scientometrics*, 95 (1), p. 87-114, DOI: /10.1007/s11192-012-0824-4.
- Moya-Anegón, F., Guerrero-Bote, V. P., Herrán-Páez, E.**, 2020, "Cross-National Comparison of Open Access Models. A Cost/Benefit Analysis", in Daraio, C., Glänzel, W. (eds.), *Evaluative Informetrics. The Art of Metrics-Based Research Assessment. Festschrift in Honour of Henk F. Moed*, Cham, Springer, p. 309-325, DOI: 10.1007/978-3-030-47665-6_14.
- Mugnaini, R., Damaceno, R. J. P., Digiampietri, L. A., Mena-Chalco, J. P.**, 2019, "Panorama da produção científica do Brasil além da indexação. Uma análise exploratória da comunicação em periódicos", *Transinformação*, 31, DOI: 10.1590/2318-0889201931e190033.
- Ni, C., Smith, E., Yuan, H., Larivière, V., Sugimoto, C. R.**, 2021, "The Gendered Nature of Authorship", *Science Advances*, 7 (36), DOI: 10.1126/sciadv.abe4639.
- Oliveira, A., Félix de Melo, M., Baraque de Rodrigues, Q., Pequeno, M.**, 2021, "Gênero e desigualdade na academia brasileira. Uma análise a partir dos bolsistas de produtividade em pesquisa do CNPq", *Configurações*, 27, p. 75-93, DOI: 10.4000/configuracoes.11979.
- Ràfols, I.**, 2019, "S&T Indicators in the Wild. Contextualization and Participation for Responsible Metrics", *Research Evaluation*, 28 (1), p. 7-22, DOI: 10.1093/reseval/rvy030.
- Rietti, S., Maffia, D.**, 2005, "Género, ciencia y ciudadanía", *Arbor. Ciencia Pensamiento y Cultura*, 181 (716), p. 539-544, DOI: 10.3989/arbor.2005.i716.411.

- Rodriguez-Medina, L., Vessuri, H.**, 2021, "Personal Bonds in the Internationalization of the Social Sciences. A View from the Periphery", *International Sociology*, 36 (3), p. 398-418, DOI: 10.1177/0268580920962014.
- Sile, L.**, 2022, "The Bright and the Dark Side of National Databases for Research Output", in Engels, T. C., Kulczycki, E. (eds.), *Handbook on Research Assessment in the Social Sciences*, Cheltenham, Edward Elgar Publishing, p. 136-147.
- Sismondo, S.**, 2009, "Ghosts in the Machine. Publication Planning in the Medical Sciences", *Social Studies of Science*, 39 (2), p. 171-198, DOI: 10.1177/0306312708101047.
- Smith, E., Williams-Jones, B., Master, Z., Larivière, V., Sugimoto, C. R., Paul-Hus, A., Shi, M., Resnik, D. B.**, 2019, "Misconduct and Misbehavior Related to Authorship Disagreements in Collaborative Science", *Science and Engineering Ethics*, 26 (4), p. 1967-1993, DOI: 10.1007/s11948-019-00112-4.
- Thelwall, M., Abdoli, M., Lebiedziewicz, A., Bailey, C.**, 2020, "Gender Disparities in UK Research Publishing. Differences between Fields, Methods and Topics", *Profesional de la Información*, 29 (4), DOI: 10.3145/epi.2020.jul.15.
- Van Leeuwen, T.**, 2022, "Using Research Metrics in Support of Assessing Social Sciences Research Performance. A Comparison of Major Bibliographic Systems", in Engels, T. C., Kulczycki, E. (eds.), *Handbook on Research Assessment in the Social Sciences*, Cheltenham, Edward Elgar Publishing, p. 148-161.
- Vincent-Lamarre, P., Sugimoto, C. R., Larivière, V.**, 2020, "The Decline of Women's Research Production during the Coronavirus Pandemic", *Nature Index*, 19 may 2020, online: <https://www.natureindex.com/news-blog/decline-women-scientist-research-publishing-production-coronavirus-pandemic> (accessed 04/04/2023).
- Zhang, T., Curry, M. J.**, 2022, "How Do We Know (If) It Works? A Review of Research Evaluating Publishing Pedagogies for Multilingual Writers", *Journal of Second Language Writing*, 58, DOI: 10.1016/j.jslw.2022.100917.