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A FEMINIST CITATION BURST? TOWARDS A FRAMEWORK FOR EXPERIMENTATION USING THE SCIELO DATABASE*

GENDER INEQUALITIES IN THE PRODUCTION AND CIRCULATION OF SCIENTIFIC KNOWLEDGE

Gender inequality in academic production and recognition has been widely documented, especially regarding the underrepresentation of women scholars in citation practices (Huang et al., 2020; Larivière et al., 2013; West et al., 2013). These imbalances reflect broader patterns of erasure ––—particularly of work by intellectuals from historically disenfranchised groups—and highlight the continued dominance of predominantly white, male canons as the normative core of academic research. They also reveal the marginalization and ghettoization of debates on gender, race, and coloniality within scholarly inquiry (Chakravartty et al., 2018). Researchers have shown that this dynamic manifests across multiple arenas: women and non-white scholars, and those from the Global South are less likely to be included in course syllabi, classroom discussions, disciplinary canons, prominent conference panels, and editorial boards of academic journals (Dworkin et al., 2020).

Research across disciplines shows that many academic fields still uphold canons shaped by predominantly white, male perspectives, which continue to marginalize and erase the contributions of women and non-white scholars (Daflon & Sorj, 2021; Luo et al., 2018; Soares Pinheiro, 2020). In Brazil, this pattern is reflected in the well-documented "scissor effect": the gradual drop in the number of women as they move up the academic ranks. Women receive less research funding, are less likely to obtain stable faculty positions, and remain underrepresented among the most prominent and influential scholars—clear signs of persistent structural barriers in

academia (Candido et al., 2023; Chan & Torgler, 2020). Studies also show that learning about women's ideas, experiences, and work can be a powerful source of inspiration and motivation, helping to broaden and diversify the production and understanding of scientific knowledge (Kwon, 2022). This makes it all the more urgent to build *corpora* that document and elevate the contributions of women scholars—especially given that, in many disciplines, little to no data exists on their roles or impact (Vargas-Solar, 2022).

PRODUCING DATA ON INTELLECTUAL WOMEN: FROM EPISTEMIC VIOLENCE TO CITATION JUSTICE

For several decades, researchers have worked to document the contributions of women scientists across a wide range of disciplinary fields. These efforts aim to produce data that is intersectional geographically diverse, organized by disciplines and subdisciplines, reflective of the impact of their work. In recent years, a growing number of studies have recovered the ideas, work, and careers of women scientists throughout Latin American science and the humanities, highlighting their influence on the region's social, political, and cultural life (Buarque de Hollanda, 2020; Cormick, 2022; Daflon & Sorj, 2021; Josiowicz et al., 2023; Vargas-Solar, 2022)[1]. These studies underscore, among other things, the connection between recovering and examining the work and careers of women scholars and scientists and the history of feminist movements that have long challenged the exclusionary nature of the public sphere in Latin America (Blay & Avelar, 2022; Cormick, 2022). Data science—and more specifically, data feminism—has developed a range of methods, approaches, and datasets to build *corpora* centered on these women, enabling the examination of their positionality. This work is closely linked to campaigns and activist efforts across online platforms, social media, and both academic and non-academic spaces that promote the citation, reading, and study of women scholars (D'Ignazio & Klein, 2020; Josiowicz & Méndez, 2024; Kwon, 2022). These initiatives are part of a broader struggle for academic legitimacy and scientific recognition, advocating for changes to the academic canon and the creation of new methodologies, research *corpora*, and definitions of what it means to be an intellectual.

A recurring issue in this debate is the underrepresentation of women scholars in citation patterns—a key factor in the ongoing disparities in how knowledge produced by women is recognized. Studies across various fields show that work authored by women tends to be cited less frequently than that by men, even when controlling for factors such as discipline, journal prestige, and research impact (Wang & Barabási, 2021). This phenomenon, known as the "Matilda effect" (Rossiter, 1993), reveals a systematic pattern of diminished recognition for women's contributions to science. Beyond limiting the visibility and influence of their ideas, this inequality has direct consequences for career advancement, as citation metrics often play a central role in decisions regarding funding, promotions, and awards.

In the field of scientometrics, and in conversation with social movements both inside and outside academia, the concept of *citation justice* has emerged as a response to persistent imbalances in citation practices regarding gender, race, and ethnicity. These disparities reflect—and often reinforce—existing inequalities within academic spaces (Cunningham, 2024; Dworkin et al., 2020; Kwon, 2022). Various initiatives have sought to promote citation justice, or ethical citation, by raising awareness about how citations are distributed. These efforts include diversifying reading lists and classroom discussions, adding citation ethics or diversity statements to journal articles, and rethinking the gender and racial composition of peer reviewers and editorial boards.

A growing body of research shows that citation practices across various disciplines—whether by means of direct citations or co-citation in reference lists—tend to produce strong patterns of homophily within citation networks, particularly along gender, race, and geographic lines (Ghiasi et al., 2018). In other words, scientific citation networks often cluster male and predominantly White researchers together, reinforcing perceptual biases that contribute to the underrepresentation of women and non-White scholars in citations and reference lists (Barabási et al., 2012; Chakravartty et al., 2018). Intersectionality and cumulative disadvantages experienced by scholars who belong to multiple historically disenfranchised groups are key factors in understanding these patterns. This highlights the urgent need to confront inequalities stemming from the uneven global distribution of knowledge. In such context, we can speak of *epistemic violence* (Spivak, 1988), which Yuderkis Espinosa defines as "making the other invisible" (Espinosa Miñoso, 2014, p. 10). This form of violence contributes to the systematic marginalization of non-white women scientists based outside the Global North (Vargas-Solar & Josiowicz, 2025). Citation networks thus reproduce and amplify broader social processes of racialization and gendering that shape the scientific field. The tendency to cite authors from similar backgrounds reflects professional socialization patterns that sustain and perpetuate historically legitimized canons (Chakravartty et al., 2018).

Researchers generally seek to measure differences in citation patterns between works authored by men and women across a range of variables, including ethnicity, career stage, age, disciplinary field, collaboration practices, and type of contribution to the study (Aksnes et al., 2019; Chan & Torgler, 2020; Dion et al., 2018; Wu, 2023). Taken together, these studies reveal substantial variation in how gender inequalities manifest in scientific practice and knowledge production, showing that these disparities intersect with other factors rather than operating in isolation. However, while this body of research effectively demonstrates the persistent and cumulative effects of gender inequality in scientific output—as well as the empirical and theoretical limitations of a narrow citation landscape—few studies have examined how changes in citation practices aimed at promoting *citation justice*, even if modest,

actually impact scientific production within specific fields or intellectual traditions.

Building on these observations, this study—marking the first stage of a broader project examining the relationship between the scientific system and gender inequality using a large-scale data analysis—investigates whether there has been a meaningful increase in the citation of women intellectuals in the Brazilian humanities. If such a trend exists, what are its characteristics and patterns? Does it signal a structural shift toward acknowledging women's intellectual contributions, or is it limited to specific disciplines, publication types, or author profiles? And to what extent does this possible increase reflect a broader reconfiguration of the academic landscape, rather than a localized adjustment within a system still marked by gender disparities?

To address these questions, we analyze recent trends in the citation of women in Brazilian humanities, focusing on the SciELO indexing database—specifically the "Human Sciences" collection of SciELO Brazil, which comprises nationally prestigious and well-regarded academic journals in these disciplines. Our aim is not only to assess whether the visibility of women intellectuals has significantly increased, but also to understand the conditions under which this increase occurs and how it takes shape. We argue that while gender-based citation inequality remains structural and persistent, it is a complex phenomenon with multiple layers and dynamics that require deeper investigation.

In addition to this introduction, which provides an overview of research on gender and the scientific system—as well as recent initiatives focused on "citation justice"—this study is structured into four main sections. The next section outlines the methodological approach to the concept of "citation burst" and its application in determining, with available data, whether there has been a significant increase in the citation of women intellectuals in recent years. The third section presents a comparative analysis of citation patterns of selected women intellectuals whose work has experienced a "burst" (Lélia González, María Lugones, and Sueli Carneiro), alongside those of "classic" figures in Brazilian social sciences. The fourth section examines, through a co-citation network, which relationships are also "bursting" within citation practices, potentially reshaping the margins and centers of communicative structures in Brazilian humanities. Finally, the last section analyzes the extent to which the gender of the citing researcher influences theoretical, thematic, and disciplinary interests that shape citations of the three selected women intellectuals.

MAPPING A CITATION BURST OF WOMEN INTELLECTUALS IN BRAZILIAN SCIENCE

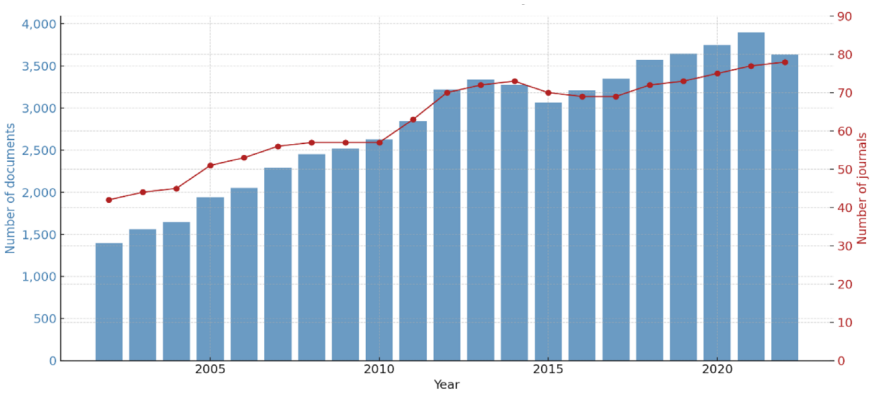
To examine scientific output in the humanities in Brazil, we collected metadata from all documents indexed by journals in the "Human Sciences"

category of the SciELO Brazil collection. This corpus includes 87 journals and 61,281 documents (such as articles, reviews, research notes, and editorials) published from 2002 to 2024. Metadata extraction took place in early 2024 using the Web of Science platform from Clarivate Analytics. Since 2014, SciELO has been integrated into the Web of Science as one of its indexed collections, enabling streamlined data retrieval (Packer, 2014). While we acknowledge that relying on a single indexing database introduces biases and blind spots (Lucio-Arias et al., 2015; Martín-Martín et al., 2020; Visser et al., 2021), it is important to note that SciELO houses a comprehensive collection of humanities journals, which serve as a primary publication outlet for many scholarly works produced in these fields in Brazil (Meneghini et al., 2007; Mugnaini et al., 2014, 2019).

Due to the metadata extraction date, we are using, for citation count, only citation data up to 2023, as data for 2024 is incomplete. It is worth noting, in fact, that 2023 data may also be partial due to potential delays by journals in indexing the final issue of 2023. In the following sections, in which we apply various text mining techniques, we will include all available material, including documents indexed in 2024.

Considering only the period from 2002 to 2022, for which we are confident that data is complete for each year, the distribution of article and journal per year is as shown in Figure 1.

Figure 1 – Evolution of Number of Documents and Journals (2002-2022)



Source: SciELO/Web of Science.

Operationalizing the detection of “citation bursts” (Chen, 2012; Zhu et al., 2023) involves analyzing how citations to specific authors are distributed over time. In our study, this analysis spans two decades of scholarly output indexed in the SciELO database. To streamline this process, we divided the dataset into four time intervals instead of tracking citation changes each year: Interval 1 (2002–2010), with 18,488 documents; Interval 2 (2011–2015),

with 15,752 documents; Interval 3 (2016–2019), with 13,780 documents; and Interval 4 (2020–2023), with 13,242 documents.

The intervals were intentionally defined as uneven to ensure a more balanced distribution of documents across periods—as the "Human Sciences" collection has steadily expanded over time—and to more effectively capture any significant changes in recent years.

The metadata extracted from Web of Science (Birkle et al., 2020) includes a field labeled "CR" (Cited References), which provides a structured list of all documents cited in an article's bibliography. The example in Figure 2 is taken from the indexed record of a study that two of its authors of this paper published, which introduced network theory to a social sciences audience in the context of the pandemic (Carvalho & Brasil Jr., 2021):

Figure 2 – Example of a Complete Record in a Metadata File

```
PT J
AU Carvalho, Lucas
   Brasil Jr., Antonio
TI A SOCIEDADE CONTRA O ACASO: TEORIA DE REDES E A PANDEMIA DO NOVO CORONAVÍRUS
X1 SOCIETY AGAINST CHANCE: NETWORK THEORY AND THE NEW CORONAVIRUS PANDEMIC
SO Sociologia & Antropologia
LA Portuguese
DT research-article
DE Network theory; SARS-Cov-2; small world effect; percolation
Y5 Teoria de redes; SARS-Cov-2; efeito de mundo pequeno; percolação
AB Abstract In this brief work, we try to present in a didactic way some fundamentals of the so-called networ
Y4 Resumo Neste breve trabalho, procuramos apresentar de maneira didática alguns fundamentos da chamada teori
C1 [Carvalho, Lucas] Universidade Federal Fluminense, Brazil.
   [Brasil Jr., Antonio] Universidade Federal do Rio de Janeiro (UFRJ), Brasil.
RI ; Carvalho, Lucas/M-9161-2018
OI Brasil Jr., Antonio/0000-0001-8653-668X; Carvalho,
   Lucas/0000-0003-0118-7762
CR Barabási AL, 1999, SCIENCE, V286, P509, DOI 10.1126/science.286.5439.509
   Bastian M., 2009, INT AAAI C WEBLOGS S, VVol. 3, P361, DOI DOI 10.1609/ICWSM.V3I1.13937
   Burt R S, 2009, Structural Holes: The Social Structure of Competition
   DiMaggio P, 2012, ANNU REV SOCIOL, V38, P93, DOI 10.1146/annurev.soc.012809.102545
   ERDOS P, 1960, B INT STATIST INST, V38, P343
   Granovetter M., 1983, SOCIAL THEORY, V1, P201, DOI [DOI 10.2307/202051, https://doi.org/10.2307/202051]
   Kumpula JM, 2009, COMPUT PHYS COMMUN, V180, P517, DOI 10.1016/j.cpc.2008.12.016
   Li RY, 2020, SCIENCE, V368, P489, DOI [10.1126/science.abb3221, 10.1101/2020.02.14.20023127]
   Mascareno A., 2018, THEOREIN, V3, P109, DOI DOI 10.26807/THEOREIN.V3I1.19
   McPherson M, 2001, ANNU REV SOCIOL, V27, P415, DOI 10.1146/annurev.soc.27.1.415
   Moore C, 2000, PHYS REV E, V61, P5678, DOI 10.1103/PhysRevE.61.5678
   Newman MEJ, 1999, PHYS REV E, V60, P7332, DOI 10.1103/PhysRevE.60.7332
   Scheffer M, 2009, Critical Transitions in Nature and Society
   TRAVERS J, 1969, SOCIOMETRY, V32, P425, DOI 10.2307/2786545
   Vespignani A, 2018, NATURE, V558, P528, DOI 10.1038/d41586-018-05444-y
   Watts DJ, 1998, NATURE, V393, P440, DOI 10.1038/30918
   White HC, 2008, IDENTITY AND CONTROL: HOW SOCIAL FORMATIONS EMERGE, 2ND EDITION, P1
NR 23
TC 0
```

Source: SciELO/Web of Science.

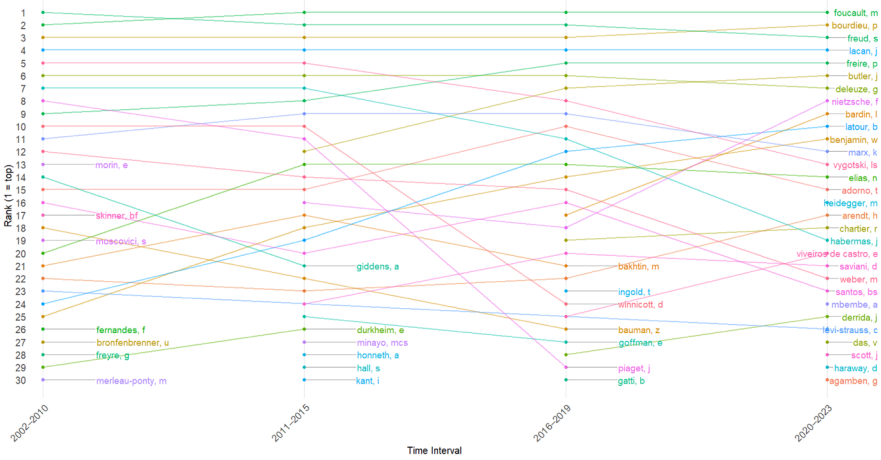
For this analysis, we focused solely on the names of the cited authors, without considering the specifics of their individual works, to minimize the amount of data to process. In other words, we are interested in tracking how a particular author is cited over time, treating their entire body of work as a single unit. Had we opted to analyze citation data for individual documents instead of authors, we would have had to process 1,009,431 distinct referenced items—an effort requiring more human and computational resources than we currently have available. By selecting the author as the unit of analysis, we reduced the dataset by more than half, totaling 419,540 unique names.

However, identifying an author is not a straightforward task, as the same name may appear in multiple forms—such as different spellings, alternative surnames, uncommon abbreviations, variations in capitalization, presence or absence of first names, or even misspellings—something that, unfortunately, happens often. To mitigate this issue, we created a thesaurus using OpenRefine software (Verborgh & Wilde, 2013) to manage spelling variations and standardize author names. Given the impracticality of processing such a large number of names, even with semi-automated methods, the strategy was to begin with the most frequently cited authors. This approach was employed because citation distributions follow a "power law" (Barabási, 2009; Barabási et al., 2012), whereby a small number of authors account for a disproportionately large share of total citations.

The thesaurus reduced the number of unique names from 419,540 to 416,944—a modest 0.62% decrease. However, given the highly uneven citation distribution, this reduction is far from negligible. For example, the top 1,000 most-cited names—merely 0.2% of the total—account for 21% of all citations. By standardizing the names at the top of this distribution and systematically tracking all known variations, we were able to carry out a relatively efficient data-cleaning process. In its current version, the thesaurus includes mapped variations for 2,034 highly cited unique names.

Before analyzing citation "bursts" themselves, one must consider the broader citation landscape in Brazilian humanities. Figure 3 offers a graphical representation of the 30 most cited names in each time interval and how their rankings evolve over time. As discussed in a previous study (Brasil Jr. & Carvalho, 2020), the figure highlights the remarkable stability of the top four positions (Foucault, Bourdieu, Freud, and Lacan), who consistently prevail throughout the entire period with only minor fluctuations. By contrast, lower-ranked positions exhibit considerable variation over time. Not all names remain among the top 30 across all intervals from 2002 to 2023. When an author drops out of the top rankings, their name label disappears from the timeline—for example, Gilberto Freyre ranked 28th in the first interval but did not reappear in the top 30 in subsequent periods. Conversely, some names appear only in the final interval and are represented by a single point without a connecting trajectory. Examples include Achille Mbembe, Veena Das, Joan Scott, and Donna Haraway. These figures are, of course, internationally recognized within the humanities—otherwise, they would not rank among the most cited. However, these authors share a common trait: each has had—or continues to have—a strong presence, whether due to their academic training or professional work, in non-hegemonic sectors of the scientific system. While this is not an unexpected finding, given recent efforts to elevate the visibility of intellectual contributions by women and non-White scholars, it does raise an important question: Are we witnessing a consistent shift in citation practices within the Brazilian humanities?

Figure 3 – Evolution of Top 30 Most Cited References (by interval)



Source: SciELO/Web of Science.

Numerous studies have increasingly challenged the taken-for-granted nature of the humanities canon, which has traditionally been male-dominated and centered on white authors from the Global North. In both Brazil and other parts of the world, a growing movement—expressed by scholarly, editorial, educational, and political initiatives—has sought to narrate alternative histories of the social sciences, ones in which the contributions of women, Black, and Indigenous intellectuals from the South are properly valued, recognized, and embraced by the academic community[2]. In this expansion of possible histories, the growing visibility of Black, Indigenous, Chicana, and peripheral intellectuals is acknowledged, with each offering new questions and ways of observing the social world.

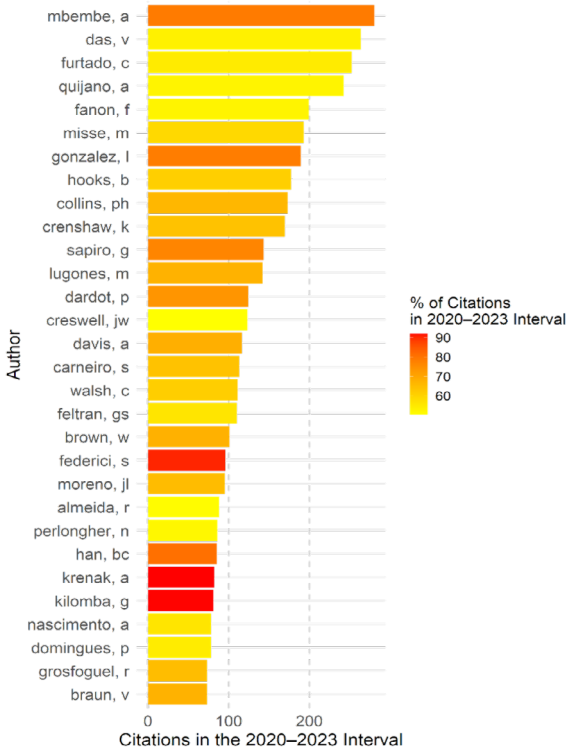
Our initial aim was to investigate whether a "citation burst" occurred recently (2020–2023), specifically regarding women intellectuals in the Brazilian humanities—particularly Black women, women from marginalized backgrounds, and/or those based in Latin America, as this dynamic intersects feminist thought with decolonial perspectives.

To operationalize our analysis, we identified all authors for whom at least 50% of their total citations occurred in the fourth interval (2020–2023). For example, if an author received 100 citations from 2002 to 2023, with 50 or more of those concentrated in the most recent period, they were classified as having experienced a recent citation "burst". This approach automatically excludes the most canonical and established figures, whose citations tend to be distributed more evenly over time due to their longstanding recognition.

With this approach, and without considering any other dimensions or variables, we arrived at the graph shown in Figure 4. The 30 names are listed in order of citations for the period 2020–2023. The warmer the color of the data bar, the higher the proportion of citations received exclusively within

this timeframe. Once again, to avoid confusion and misinterpretation, it is important to clarify that these names are not necessarily the top 30 most cited from 2020 to 2023 (as can be seen by comparing with Figure 3). Rather, they are the *most cited in this period among those who had at least 50% of their citations in this interval*. In other words, Figure 4 presents a hierarchical ranking only for the *names that burst*.

Figure 4 – Citations in the 2020-2023 Interval



Source: SciELO/Web of Science.

Based on the two available variables—the absolute number of citations from 2020 to 2023 and the proportion of those citations relative to the total—we categorized the names into three groups. The first group includes authors who experienced a citation burst in the most recent period but already had an established citation trajectory prior to 2020. This group includes Veena Das (with 53% of her citations occurring between 2020 and 2023), Celso Furtado (55%), Aníbal Quijano (53%), Frantz Fanon (53%), John W. Creswell (50%), Gabriel Feltran (56%), Ronaldo de Almeida (51%), Néstor Perlongher (52%), Petrônio Domingues (55%), and Abdias Nascimento (56%). Some authors experienced a citation burst despite having been largely overlooked by the Brazilian human sciences until recently—at least according to our methodology. These include

Achille Mbembe (with 79% of his citations occurring between 2020 and 2023), Lélia González (78%), Gisèle Sapiro (77%), Silvia Federici (91%), Byung-Chul Han (81%), Ailton Krenak (92%), and Grada Kilomba (92%). There are also "intermediate" cases—authors who were already known but whose citations have become more concentrated in the recent period. Examples include Michel Misse (59%), bell hooks (61%), Patricia Hill Collins (67%), Kimberlé Crenshaw (64%), María Lugones (67.6%), Pierre Dardot (74%), Angela Davis (68%), Sueli Carneiro (64.2%), Catherine Walsh (61%), Wendy Brown (68%), Jacob L. Moreno (66%), Ramón Grosfoguel (65%), and Virginia Braun (68%).

This distribution is noteworthy for several reasons. It reflects various factors—some generational, others related to the growing specialization in recent years—as well as the rise of decolonial, gender, intersectional, and violence studies.

However, the seven names that experienced a citation burst without a significant trajectory before 2020 stand out precisely because they deviate from the historical visibility pattern typically granted to white, North Atlantic authors. The three men—Mbembe, Han, and Krenak—are non-white, while among the four women, two are Black (González and Kilomba), and two are White European scholars (Sapiro and Federici).

In turn, among the 13 "intermediary" names, nine are women—including five Black women, four of whom are from the United States (hooks, Hill Collins, Crenshaw, and Davis) and one from Brazil (Carneiro). Lugones and Walsh are prominent figures in the Latin American decolonial debate, as is Grosfoguel, one of the four men in this group. The other three men—one Brazilian and two Europeans (Misse, Dardot, and Moreno)—experienced a citation burst in connection with growing interest in certain contemporary phenomena and/or disciplinary specializations, such as sociology of crime and violence and network theory. A similar trend applies to two other women in this group: Brown and Braun. Notably, the presence of women—particularly Afro-diasporic and Latin American women—points to the possibility of a transformation in academic and disciplinary canons within Human Sciences.

Finally, among the names that experienced a burst despite already having a citation history prior to 2020, we find key precursors of the current surge in anti-racist and/or decolonial studies, such as Furtado, Quijano, Fanon, and Nascimento (the latter two being Black authors). These four authors are associated, albeit not exclusively, with non-hegemonic circuits within global human sciences. The other names—Das, Creswell, Feltran, Almeida, Perlongher, and Domingues—increased in citations due to the growing thematic and disciplinary interests that have recently expanded their relevance, including gender and race issues, studies on violence and suffering, and a renewed focus on qualitative research methods. Notably, among these 10 names, only one is a woman: Veena Das, an Indian anthropologist based in the United States.

It is interesting to note that as the concentration of citations from 2020 onward increases, the set of names that experience this burst becomes increasingly feminist, Black, Indigenous, and peripheral. This phenomenon is clearly not coincidental, as it reflects the complex intersection between the redefinition of disciplinary logics and specializations, alongside the ongoing movement for "citation justice"—an effort to elevate scholars who have long been marginalized within the academic mainstream. Whether this also indicates a broader movement toward transforming what is considered legitimate scientific knowledge is a question that warrants further inquiry.

BURSTS AND FLUCTUATIONS IN SCIENTIFIC CITATION PATTERNS

As aforementioned, "classic" names are those that, despite seasonal fluctuations, follow a citation pattern quite different from names that have experienced a burst. In the Human Sciences collection of SciELO-Brasil, Foucault, Bourdieu, Freud, and Lacan have consistently held the top four citation positions since 2002, demonstrating an unexpectedly high level of stability in the broader communication dynamics among disciplines within this diverse field. These four names have consistently remained in the top four positions, with minimal fluctuation between them—the only noteworthy change being Bourdieu surpassing Freud for second place. Interestingly, the iconic classics of the social sciences – the trio of Marx, Weber, and Durkheim, whose canonical status has been increasingly contested—remain well-ranked but no longer dominate the top positions. In fact, all three are declining stars: Marx, now in 12th place, held 9th from 2011 to 2019; Weber, currently 22nd, had been in 12th until 2010; and Durkheim only made it into the top 30 in 2015, when he reached 26th—since then, he has hovered at a "modest" 49th in the last two intervals.

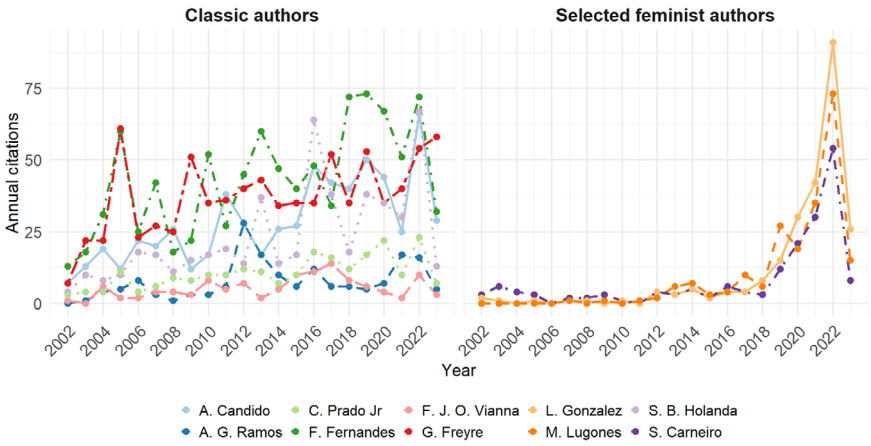
We may think of "classics" as key hubs that bridge communication gaps across disciplines and specializations. This definition is purely relational and does not account for the substance of their work. Names that are frequently cited over time are vital in generating the so-called "small world effect"—a concept long discussed in network theory (Carvalho & Brasil Jr., 2021; Travers & Milgram, 1977; Watts & Strogatz, 1998)—by linking tightly connected local clusters of names associated with niche topics and/or disciplines to other clusters. The classics, then, function as structural anchors in the global communication of the human sciences—precisely because their role, as previously discussed, is to organize and make productive the endemic dissent within the field (Alexander, 1999). This explains their enduring presence as highly cited sources. However, their continued relevance is not without fluctuations—as seen with the classic social science trio—often shaped by ongoing debates and controversies over how these foundational works engage with, or fail to address, the pressing issues of our time.

While the classics fluctuate, the names we focus on have "burst" onto the scene—or, more accurately, are still in the process of doing so. It remains

uncertain which of these newly cited figures will eventually become classics (in the relational sense defined earlier), and which will fade into relative obscurity within the scientific community. Still, by comparing different citation "life cycles," we can begin to draw some initial conclusions (Cano & Lind, 2005).

For this exercise, we selected three names of interest: Lélia González, María Lugones, and Sueli Carneiro. Among those who have recently experienced a burst, they rank 7th, 12th, and 16th, respectively—translating to 189, 142, and 113 citations from 2020 to 2023. Given that these women authors are linked to feminist, racial, and gender debates grounded in or referencing Latin America, we believe the most appropriate point of comparison is not European classics but rather Brazilian classics of humanities and social sciences, particularly the so-called "interpreters of Brazil" (Botelho, 2015; Carvalho & Brasil Jr, 2020). To construct our sample of Brazilian classics, we selected the well-known trio of essayists from the 1930s and 1940s—Gilberto Freyre, Sérgio Buarque de Hollanda, and Caio Prado Jr.—along with Francisco J. de Oliveira Vianna, a central figure in the debates of the 1920s to 1940s. We also included Florestan Fernandes, Antonio Candido, and Alberto Guerreiro Ramos, prominent figures from the first generations of university-based social sciences in Brazil.

Figure 5 – Annual Citations of Classic Authors of Brazilian Social Thought and Selected Feminist Authors



Source: SciELO/Web of Science.

The graphs in Figure 5 are presented side by side to facilitate comparison. Notably, the citation curves for the selected authors—González, Lugones, and Carneiro—are strikingly synchronized, especially when contrasted with the more erratic, though occasionally parallel, patterns of the classic authors. After showing minimal fluctuations at citation levels of less than 10 annual citations until 2018, curves for González, Lugones, and

Carneiro sharply increased around that time, likely peaking in 2022. Since the 2023 data may be incomplete, it is too early to draw conclusions about most recent trends. What stands out most is that, at the peak of citation activity in 2022, something quite remarkable occurred: Lélia González (91 citations) and María Lugones (73) surpassed the two most-cited classics that year—Florestan Fernandes (72) and Antonio Candido (66). Sueli Carneiro ended up "tied" with Gilberto Freyre, each receiving 54 citations.

INTELLECTUAL WOMEN: FROM THE MARGINS TO THE CENTER OF SCHOLARLY INQUIRY

Until now, our analysis focused on comparing citation curves of individual authors. However, the common scholarly practice of citing multiple sources—often listing a dozen or more names in the bibliography—also makes it possible to model co-citation networks, which map connections between authors who are cited together within the same documents (Boyack & Klavans, 2010). This brings us to a more relational level of analysis, in which the focus shifts to how certain names burst in tandem with others, (potentially) reshaping the boundaries between the center and the margins of the network. After all, what does it mean for certain names to have burst? Was this burst limited to relatively marginal or niche segments, or are these names, in their reciprocal relationships, associated with central intellectuals in the co-citation network?

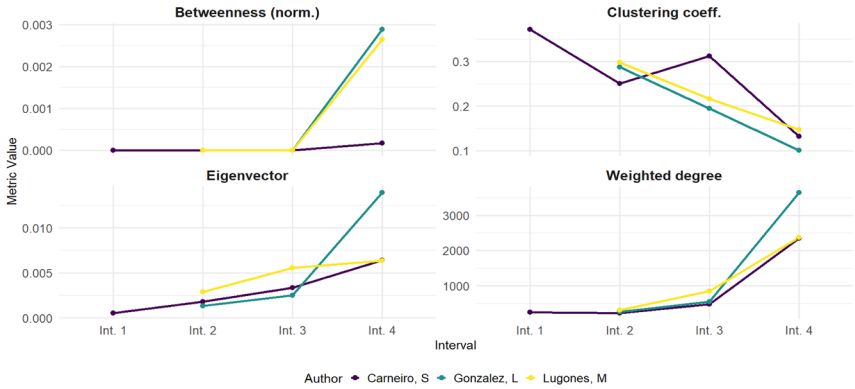
Let us return to the predefined corpus of scientific articles that cite the three selected intellectual women: Lélia González, María Lugones, and Sueli Carneiro. Using the VOSviewer software (Van Eck & Waltman, 2010), which is designed to visualize scientific networks, we modeled a co-citation network for each of the defined time intervals (2002–2010, 2011–2015, 2016–2019, and 2020–2023). These models made it possible for us to calculate four different metrics that quantitatively assess whether these authors are becoming more central to the network or remain confined to a specific, well-defined cluster within its main component. The metrics include betweenness centrality, clustering coefficient, eigenvector centrality, and weighted degree—the latter referring to "link strength," as defined by VOSviewer, based on the number of co-occurrences between two names in bibliographic references. We computed centrality measures using a range of network analysis and statistical packages available in the R programming language (RStudio Team, 2015).

Betweenness centrality refers to a node's ability to connect otherwise disconnected clusters—authors with high betweenness centrality help shorten the overall distance across the network (Freeman, 1977). The clustering coefficient, by contrast, measures the extent to which neighboring nodes are connected to one another. For example, if all the names connected to a particular node are also interconnected, they form a "clique,"[3] and the clustering coefficient reaches its maximum value. Conversely, if a node's

neighbors have few links among themselves, the clustering value will be low (Watts, 2018). When a name begins to form broader, more global connections—that is, links extending beyond its immediate cluster—it typically increases in betweenness centrality and decreases in clustering coefficient. This pattern is evident in all three cases, though it is less pronounced for Carneiro, whose intermediary role is weaker than that of González and Lugones.

Eigenvector centrality and weighted degree centrality capture different aspects of what it means to be "central" in a network. The latter—more intuitive—is simply the sum of weights of a given name's connections (Barrat et al., 2004); in this case, the total link strength. While informative, this metric offers a limited view, as it does not account for the relative importance of those connections. Eigenvector centrality addresses this limitation by factoring in the weighted degree of a node's neighbors, adjusting the centrality score based on the significance of nodes to which it is connected (Bonacich, 1987). For instance, a name connected to five highly influential names may be considered more central, according to this "recursive" calculation logic, than a name connected to 50 less significant ones. While correlated, these two metrics highlight an interesting phenomenon when compared: although Carneiro, Lugones, and González all significantly increase the total strength of their connections (weighted degree), González outperforms the others in terms of eigenvector centrality, suggesting stronger links with more central names in the network.

Figure 6 – Evolution of Centrality Metrics Across 4 Intervals



Source: Authors' calculations based on SciELO/Web of Science cited-references data.

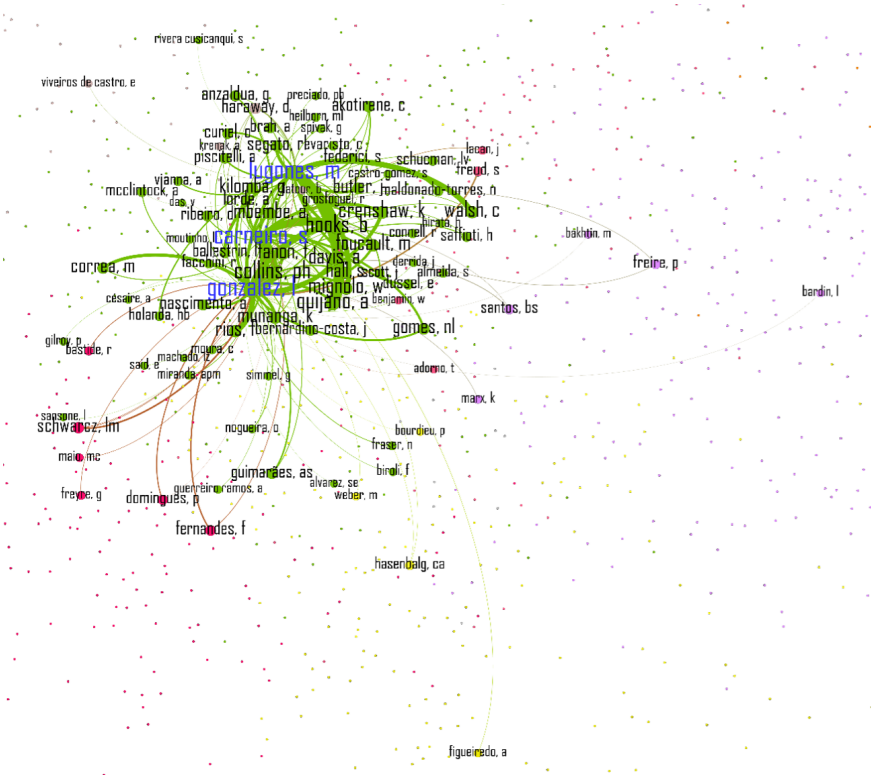
In summary, within network analysis, we can conclude that, to varying degrees, the three authors have shifted from the margins to the center of the co-citation network in the Brazilian humanities.

However, before moving on to the next section, it is worth examining *what these relationships actually are*. Which names are most intensively connected to the three selected authors? To make this easier to observe, we

isolated the co-citation network from the most recent time period—the point in which their citation patterns burst—and filtered it to include only connections involving these authors. Additionally, to improve visualization, we applied another filter, selecting only names with 20 or more citations.

This results in the network visualization (Figure 7), where the nodes (elements) are ranked by the *strength of their links within this subset of relationships* (i.e., considering only the weight of connections with the selected authors), and the edges (relationships) are defined, in their thickness, by the intensity of the connection. Colors indicate clusters identified in the original, unfiltered network[4], based on the standard modularity calculation using the Louvain algorithm (Traag et al., 2019). The spatial distribution of the nodes was generated using a "force" algorithm, which simulates a gravitational field where elements are attracted or repelled based on the existence and strength of their connections. Names frequently cited together tend to cluster closer in the network's topological space, while names that are only occasionally cited together tend to be farther apart (Jacomy et al., 2014).

Figure 7 – Co-Citation Network Showing Only Edges to the Selected Feminist Authors



Source: Authors' own elaboration based on citation data from SciELO/Web of Science. Network modeling performed with VOSviewer and Gephi..

It is worth noting that all three authors are located within the same green-colored cluster, which also includes key figures in Black feminism and gender studies, decolonial thought in Latin America, and Michel Foucault—a central gravitational figure in this cluster and the most cited author in Brazilian human sciences. This is significant because, in terms of co-citation patterns, these authors are closely linked to a core debate within the human sciences—one focused on the need to rethink modern disciplinary configurations and the production of social differences. Interestingly, beyond the green cluster—where denser connections are to be expected—only one other grouping, shown in red, maintains significant ties with all three selected authors. This cluster sits at the intersection of "Social Thought in Brazil" and the sociology of race relations, bringing together both classic figures (such as Florestan Fernandes, Gilberto Freyre, and Roger Bastide) and contemporary scholars focused on these themes (including Lilia Schwarcz and Marcos Chor Maio). Unsurprisingly, recent debates have prompted a critical reckoning with the tradition of race relations studies in Brazil, challenging established views not only of classics but also on the very nature of the country's historical formation.

We could argue that the sharp rise in centrality of the three selected authors is, at least partly, tied to the fact that the debates they engage in focus on—among other things—the exclusionary nature of the canon and the critical reassessment of its blind spots, not only within European social theory but also in relation to Brazilian classics. As we know, classics play a key intermediary role by reducing distances within the network. Connecting with highly central names can be one of the most effective ways to rapidly increase one's own centrality—regardless of whether the connection is positive or negative, since simply citing someone is enough to establish a relational link.

However, when we filter the network to the top 30 connections involving González, Lugones, and Carneiro (Chart 1), we observe that these ties are overwhelmingly concentrated among Black scholars and those based in—or closely connected to—peripheral contexts of knowledge production. Within the larger cluster where Foucault remains the most cited figure (in the unfiltered network), a distinct subcluster clearly takes shape. This subcluster effectively acts as a bridge between debates rooted in French Theory and/or the United States and the Brazilian sociological tradition, while simultaneously affecting both ends of this relationship.

Chart 1 – Top 30 Highest-Weight Edges Involving Only the Three Selected Authors

Author A	Author B	Weight
lugones, m	quijano, a	124
carneiro, s	gonzalez, l	95
collins, ph	gonzalez, l	94
carneiro, s	hooks, b	79

continues...

continuation

Author A	Author B	Weight
gonzalez, l	hooks, b	77
carneiro, s	collins, ph	76
gonzalez, l	rios, f	67
lugones, m	walsh, c	66
lugones, m	mignolo, w	61
davis, a	gonzalez, l	54
crenshaw, k	gonzalez, l	46
ballestrin, l	lugones, m	42
correa, m	gonzalez, l	42
fanon, f	gonzalez, l	42
gonzalez, l	munanga, k	41
lugones, m	segato, rl	41
carneiro, s	crenshaw, k	40
gonzalez, l	lugones, m	38
gonzalez, l	mbembe, a	37
butler, j	lugones, m	36
dussel, e	lugones, m	35
gonzalez, l	quijano, a	35
foucault, m	gonzalez, l	34
carneiro, s	davis, a	32
carneiro, s	gomes, nl	32
carneiro, s	mbembe, a	32
gonzalez, l	nascimento, a	32
carneiro, s	fanon, f	31
gonzalez, l	mignolo, w	30
carneiro, s	foucault, m	29

Source: Authors' calculations based on SciELO/Web of Science cited-references data.

AUTHORSHIP GENDER, COLLABORATION, AND PUBLICATION PATTERNS ON INTELLECTUAL WOMEN

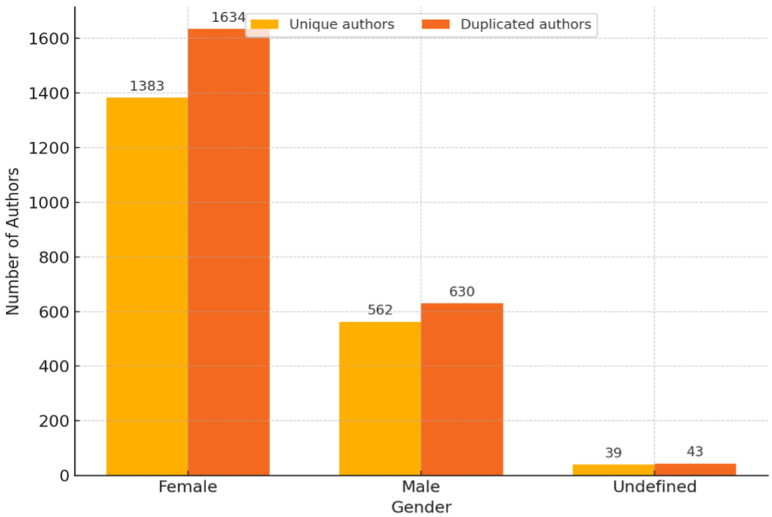
Could the authors' gender in the documents we are analyzing be relevant in understanding the citation burst previously discussed? To explore this question, we examined the gender of those who cited at least one of the three selected women scholars, looking for possible patterns between the gender of the citing authors and that of the authors being cited—and how these patterns may have contributed to the recent rise in citations of women. We focused on the three most-cited women scholars during 2020–2023, which we have characterized as a moment of "burst": Lélia Gonzalez (189 citations), María Lugones (142 citations), and Sueli Carneiro (113 citations). We must highlight that this is a preliminary analysis, and the results will help assess the feasibility of applying this method to the entire SciELO Human Sciences

collection in a future stage of the research. We collected 1,428 documents from SciELO that cite at least one of the aforementioned women authors. Of these, 191 documents cite more than one author. For subsequent analyses, we will use the remaining 1,237 documents after removing duplicates.

For this dataset, we extracted the first name of each author(s) for every document and used the "nomquamgender" package in Python to identify the gender of the authorship (Van Buskirk et al., 2023). Although classifying gender based on first names has inherent limitations—such as possible misattributions, particularly in multicultural or historical contexts in which the association between names and gender can be ambiguous or inconsistent (Pilcher, 2017)—this method remains useful to classify and analyze large-scale datasets. As emphasized by Van Buskirk et al. (2023), the reliability of this classification improves significantly when a stringent uncertainty threshold is applied, ensuring that only names with sufficiently accurate gender assignments are included in the analysis[5]. Thus, despite methodological and ethical challenges associated with potential misattributions (Pilcher, 2017; Van Buskirk et al., 2023), the rigorous and transparent use of these methods can open up valuable avenues for research into the gender dynamics at play in scientific and social phenomena, such as the citation burst observed in this study.

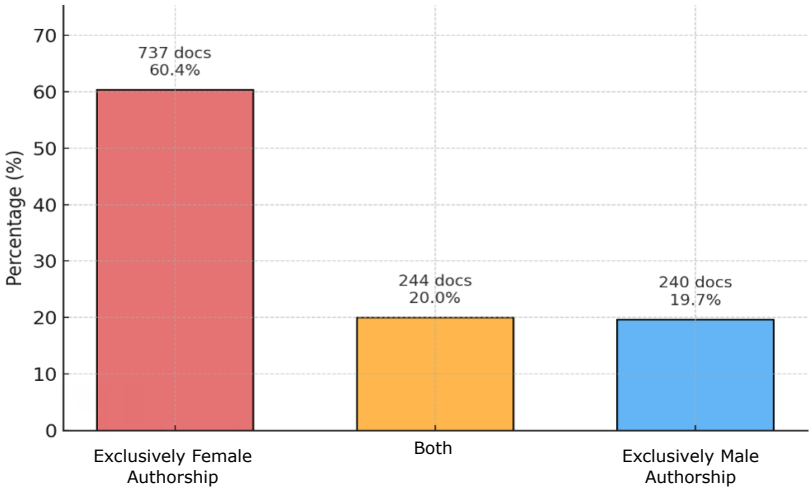
From the sample analyzed, which includes articles indexed in SciELO from 2002 to 2024, we identified 1,634 female authorships, 630 male authorships, and 43 unclassified cases, accounting for duplicates (i.e., the same name appearing across multiple documents). After removing duplicate author names, the final result is 1,383 female authors, 562 male authors, and 39 unclassified cases.

Figure 8 – Comparison of Author by Gender



Source: Authors' calculations based on SciELO/Web of Science data.

Figure 9 – Distribution of Autorship by Gender

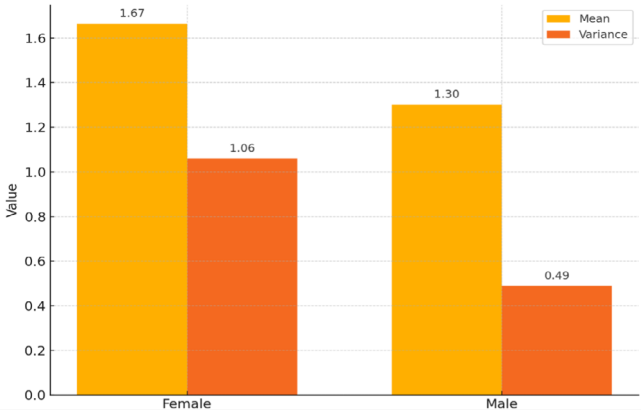


Source: Authors' calculations based on SciELO/Web of Science data.

The composition of co-authorship teams also revealed interesting patterns. When analyzing authorship by gender, excluding documents with at least one undefined author, we found that 240 documents were authored exclusively by men, 244 by both men and women, and 737 exclusively by women. Among the documents authored solely by men, 65 involved co-authors, while 322 documents authored solely by women involved co-authorship. A proportion test conducted to assess the distribution of these collaborations revealed a statistically significant gender difference (CI = 95%, df = 1, p = 7.028e-06). This suggests that, within our sample, women tend to collaborate more frequently with other women, while men display a more diverse collaboration pattern.

In the mixed-gender authorship group, which includes articles with at least one male and one female author, we identified 315 male authorships and 390 female authorships. Of the 244 documents in this group, 153 (62%) list a woman as the first author. This indicates that women are actively involved in mixed-gender research teams, frequently taking on leadership roles in authorship, although they are not the dominant presence. These observations are further corroborated by data on the average and variance of authorships by gender.

Figure 10 – Mean and Variance of Number of Autorships by Gender



Source: Authors' calculations based on SciELO/Web of Science data.

The findings indicate that the average number of coauthors on studies authored by women is 1.67, compared to a lower average of 1.30 for studies authored by men. This supports the earlier observation that women are more likely than men to publish collaboratively on these three authors. This difference may reflect distinct academic engagement strategies, with women more frequently relying on collaborative networks to strengthen and consolidate their scholarly output. Additionally, this tendency toward greater collaboration may signal specific challenges faced by women in academia, such as the need to build broader support systems and secure institutional recognition.

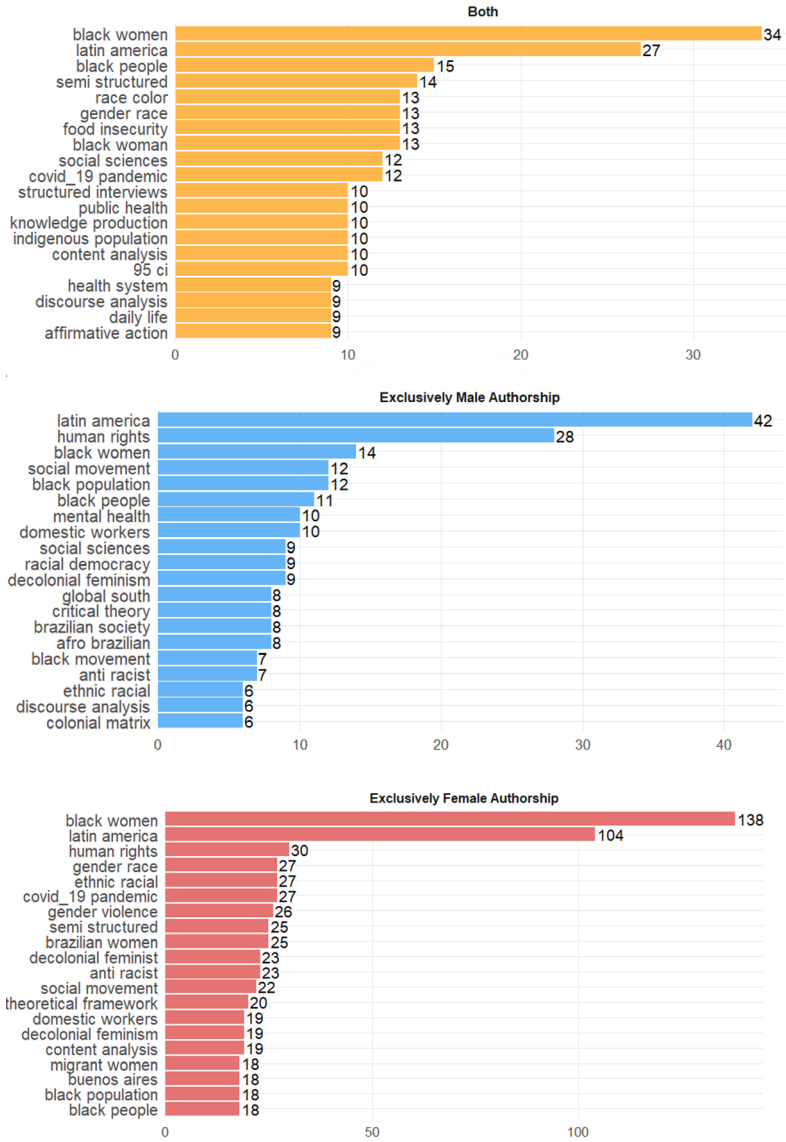
Another noteworthy dimension of the data is the variation in co-authorship patterns. Among female authorships, the variance is 1.06, whereas for male authorships it is significantly lower, at just 0.49. This suggests that women have a more heterogeneous publishing experience: while some female authors primarily publish as solo researchers, others engage in projects with multiple co-authors, leading to a wider distribution of co-authorship counts. In contrast, the lower variance among men points to a more uniform publishing profile, with most male authors collaborating with a relatively consistent number of co-authors.

Thus, the data analyzed not only reveal distinct patterns between men and women in scientific publishing on women intellectuals, but also suggest that academic collaboration may be crucial in shaping gender inequalities within science. Further research into the causes and consequences of these differences could provide a deeper understanding of knowledge production dynamics on these female intellectuals and the structuring of academic networks.

The analysis of bigrams—pairs of terms that most frequently appear together—extracted from article abstracts and categorized by authorship type

(exclusively male, exclusively female, or mixed), reveals notable differences in the thematic repertoires each group engages with. These consecutive word pairs, extracted automatically, offer a glimpse into dominant topics of the studies and, indirectly, into how researchers position themselves within and contribute to broader debates in the humanities.

Figure 11 – Top 20 Bigrams Extracted from Document Abstracts by Authorship Gender



Source: Authors' calculations based on SciELO/Web of Science data.

In articles authored exclusively by men, there is a clear emphasis on themes typically seen as more traditional within social sciences, focusing on structures, institutions, and broad historical processes. Bigrams such as "Latin America," "human rights," "social movement," "racial democracy," and "racial relations" point to a vocabulary grounded in contextual and structural analysis. At the same time, the presence of terms like "Black women" and "Afro-Brazilian" suggests an engagement—albeit more limited—with critical theoretical perspectives and intersectional markers such as gender and race.

In contrast, articles authored exclusively by women exhibit a markedly different vocabulary, one more deeply rooted in critical and intersectional perspectives. Frequent bigrams such as "Black women," "gender race," "gender violence," "decolonial feminist," and "ethnic racial" reflect not only a thematic focus on inequality but also the use of feminist and decolonial theoretical frameworks—approaches less prominent in abstracts authored solely by men. Moreover, there is a distinct emphasis on the social experiences of Black women, both Brazilian and Latin American, underscoring their centrality not only as subjects of inquiry, but more importantly as producers of knowledge and as a fundamental part of the theorical and methodological framework. In studies with mixed-gender authorship, the vocabulary more closely resembles that of exclusively female-authored works. Notably, bigrams such as "Black women," "gender race," "food insecurity," "public health," and "race color" appear frequently. A particularly striking feature of this category—also observed in the exclusively female group—is the high occurrence of the "COVID 19 pandemic" bigram, which appears only four times in papers authored solely by men.

The low frequency of the term "COVID 19 pandemic" in abstracts of studies authored solely by men contrasts sharply with its prominent presence in works authored by women or mixed-gender teams, suggesting a gendered impact on research agendas during the pandemic. This finding should not be interpreted merely as a reflection of thematic interest, but as evidence of how the pandemic particularly affected the academic practices, concerns, and priorities of female researchers. While the pandemic exacerbated pre-existing social inequalities, it also reshaped the daily lives of women scientists, many of whom found themselves overwhelmed by domestic and childcare responsibilities during lockdowns. Yet, this experience also sparked a powerful intellectual response, visible in academic literature, which began to address the multifaceted dimensions of the health crisis: mental health, food insecurity, and gender and racial inequalities, among others.

In summary, our thematic analysis reveals that the vocabularies used in the abstracts do more than reflect different research interests—they embody distinct experiences of conducting science. Female authorship, in particular, is more closely tied to contemporary, critical, and socially engaged topics. This is evident not only in the choice of research subjects but also in how these subjects are named, framed, and theoretically grounded. Therefore,

gender in authorship emerges as more than just a demographic variable; it is a shaping force in the production of knowledge within the humanities.

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It is often said that we are currently experiencing a "feminist burst." In scientometric studies, particular attention is given to "citation bursts"—a phenomenon where an author, concept, or keyword experiences a sudden rise in occurrences, indicating potential shifts in the communicative structures of science (Chen, 2012; Leydesdorff, 1989). Citations reveal the communicative patterns that organize the scientific system, enabling us to map the ways in which knowledge is understood and to construct a vocabulary and grammar of the knowledge produced within it. We know that various disciplinary fields—including within the humanities and social sciences—have citation patterns historically shaped by inequalities of gender, race, language, and geolocation. These patterns echo an epistemic hierarchy present in the academic space, reflected in disciplines, conferences, career promotions, resource distribution, and in the editorial management of journals and book collections. In response, initiatives involving social movements both within and beyond academia have been advocating for principles of citation justice, also known as citation ethics. This entails not only recognizing these gender, racial-ethnic, and global inequalities but also actively working to reduce them with diverse educational, editorial, scientific, and political initiatives within Brazilian social sciences.

Our research on articles in the humanities from the SciELO Brazil collection indicates that there have been recent significant changes in citation patterns within the Brazilian scientific field, representing a true "explosion of citations" of women intellectuals—particularly of Afro-diasporic women and other thinkers central to decolonial thought. These intellectuals have moved from the margins to the center of citation networks in the Brazilian humanities, pointing to the need to rethink what is considered legitimate knowledge in science and to reflect on social inequalities and differences—specifically, who is included and who is excluded from knowledge production. This process challenges the canons of both European social theory and the classics of Brazilian social thought. Furthermore, our research highlights the leadership of women in publishing about feminist and decolonial intellectuals, whether individually or within collaborative networks. According to our analyses, female-authored works on women intellectuals appear to be more deeply engaged with critical, intersectional, and decolonial perspectives, focusing on the social experiences of Afro-diasporic and Latin American women as a fundamental part of their theoretical and methodological frameworks.

The question remains: To what extent is this "feminist explosion of citations" driven by a still-superficial need to construct a more diverse citation horizon, potentially used to align with prevailing academic trends? To what

extent is there a genuine, in-depth incorporation of decolonial and postcolonial thought, Black feminism, and the thinking of Indigenous authors? Does this signal a true shift in themes and questions—indicating a transformation in the academic and disciplinary canons of the humanities and in what is considered scientific knowledge? And to what degree is this change driven by transformations within the Brazilian academic population itself, at the undergraduate, graduate, and faculty levels? These are questions that must be addressed in future research, capable of correlating the themes present in these articles, their citation patterns, and the characteristics of knowledge producers—ultimately constituting a robust research agenda in the field.

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NOTES

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1 Given the diversity and scope of research on this topic, we chose to highlight only studies that span different publishers, countries, and academic disciplines.

2 There are numerous initiatives in this regard; due to space constraints, we will mention only a few: Buarque de Hollanda (2019, 2020), Daflon and Sorj (2021), Candido (2024), Oliveira and Roque (2024) and Josiowicz et al. (2023).

3 A clique is a network structure in which every element is connected to every other element. More precisely, it is a set of nodes for which each pair is directly joined by an edge—i.e., a complete subgraph.

4 In the author co-citation network for the most recent temporal interval (2020–2023), eight main clusters emerge, each aligned with a distinct disciplinary specialization. The largest cluster centers on education, with Paulo Freire being the most frequently co-cited author (887 citations). The second-largest cluster—encompassing the three selected feminist scholars—is organized around Michel Foucault, who registers 1,973 citations (the highest in the entire network), and also includes prominent female theorists such as Judith Butler (776 citations), Veena Das (263), and Joan Scott (258). The third cluster brings together foundational figures in Brazilian social sciences and those engaged in historiographical debate—both within Brazil and in broader historical contexts—among them, Roger Chartier (306 citations), Celso Furtado (252), Florestan Fernandes (222), and Lilia Schwarcz (210). The fourth cluster unites contributors to political sociology, political science, and political theory, including Ernesto Laclau (149 citations), Marta Arretche (123), and Angela Alonso (119). The fifth cluster pertains to psychology, linking Albert Bandura (121 citations) and B. F. Skinner (88). The sixth cluster comprises authors in psychoanalysis and critical theory, notably Sigmund Freud (1,427 citations), Jacques Lacan (1,230), and Theodor Adorno (323). The seventh cluster aggregates key sociological thinkers—Pierre Bourdieu (1,509 citations), Max Weber (287), and Erving Goffman (218)—while the eighth corresponds to anthropology, featuring Bruno Latour (412 citations), Eduardo Viveiros de Castro (303), and Claude Lévi-Strauss (266).

5 The "nomquamgender" package uses a maximum uncertainty threshold to determine whether a name can be reliably classified by gender. When the model's confidence is too low—that is, when uncertainty is high—it will refrain from assigning a gender. For our dataset, the model recommended a maximum uncertainty threshold of 0.08, which allowed gender to be assigned to 90% of the names. This means that if the uncertainty for a name exceeds 0.08, the model will not assign a gender. However, if the uncertainty is at or below 0.08, the model proceeds with the gender assignment. It is important to note that the 0.08 threshold refers to the model's level of uncertainty or ambiguity—not to the probability of a particular gender.

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A FEMINIST CITATION BURST? TOWARDS A FRAMEWORK FOR EXPERIMENTATION USING THE SCIELO DATABASE

Keywords
Citation burst;
Scientometrics;
Scholarly communication;
Gender and scientific citation;
Humanities.

Abstract

This study investigates the recent phenomenon of a "citation burst" involving female intellectuals in Brazilian humanities, drawing on data from SciELO spanning from 2002 to 2023. Using scientometric methods, we identified a notable increase in citations directed specifically towards feminist, Black, decolonial, and Latin American intellectuals. By analyzing co-citation networks, we found that these authors have shifted from peripheral to more central positions in contemporary academic debates. Furthermore, we examined how the gender of authors influences citation practices and academic collaboration patterns, particularly when citing intellectual women, predominantly decolonial and antiracist. This study underscores how broader cultural shifts related to "citation justice" have significantly, though unevenly, impacted scholarly communication dynamics within the humanities in Brazil.

UMA EXPLOSÃO DE CITAÇÕES FEMINISTAS? ALGUMAS EXPERIÊNCIAS BASEADAS NA UTILIZAÇÃO DA BASE DE DADOS SCIELO

Palavras-chave
Explosão de citações;
Cientometria;
Comunicação científica;
Gênero e citação científica;
Humanidades.

Resumo

Este artigo investiga o fenômeno recente de uma "explosão de citações" envolvendo intelectuais mulheres nas humanidades brasileiras, com base em dados da base SciELO entre 2002 e 2023. Utilizando métodos cientométricos, identificamos um aumento significativo nas citações dirigidas especificamente a intelectuais feministas, negras, decoloniais e latino-americanas. Por meio da análise de redes de cocitação, observamos que essas autoras passaram de posições periféricas a lugares mais centrais nos debates acadêmicos contemporâneos. Além disso, examinamos como o gênero dos autores influencia as práticas de citação e os padrões de colaboração acadêmica, especialmente no que se refere à citação de mulheres intelectuais predominantemente decoloniais e antirracistas. O estudo destaca como mudanças culturais mais amplas, relacionadas à chamada "justiça citacional", impactaram de forma significativa, ainda que desigual, as dinâmicas da comunicação científica nas humanidades no Brasil.