Epistemic Violence Against Female Artists and Scientists in Latin America on Wikipedia: Unveiling the Imbalance Between Minority and Majority Worlds using Graphs

Genoveva Vargas-Solar[1], Alejandra Josiowicz[2]

[1]*CNRS, Univ Lyon, INSA Lyon, UCBL, LIRIS, UMR5205, F-69221, France*

[2]*Instituto de Letras, Universidade Estadual do Rio de Janeiro (ILE-UERJ) and Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ), Brazil*

Abstract

The democratization of the Internet and the perceived "universal" access to online content have long given the impression of progress and inclusion. However, digital content overwhelmingly represents knowledge produced in English and within the majority world, reflecting only a fraction of the knowledge created throughout history across diverse cultures. Epistemic violence remains pervasive in much of the moderated content online, yet its extent is challenging to measure. This paper introduces a novel approach to address this gap by proposing an Epistemic Violence Index applied to Wikipedia biographies of Latin American women scientists and writers. Our study involves constructing a graph representation of the Wikipedia network connections for leading female figures in science and literature from the 19th and 20th centuries. The analysis highlights their connections with influential voices both within the region and in the majority world, evaluating the reciprocity and imbalance of these relationships. By leveraging these graphs, we compute an Epistemic Violence Index based on an intersectional set of variables, including gender identity, socio-economic status, and race, providing an initial step toward quantifying and addressing this persistent issue.

Keywords

Data science pipelines, graph analytics, Wikipedia, epistemic violence index

1. Introduction

The democratization of the Internet and the perceived "universal" access to online content have long given the impression of progress and inclusion. However, digital content overwhelmingly represents knowledge produced in English and within the majority of the world, reflecting only a fraction of the knowledge created throughout history across diverse cultures. Epistemic violence remains pervasive in much of the moderated content online, yet its extent is challenging to measure. This paper introduces a novel approach to address this gap by proposing an Epistemic Violence Index applied to Wikipedia biographies of Latin American women scientists and writers.

We analysed Wikipedia content across languages by creating and exploring graphs to examine digital knowledge production and circulation inequalities. We drew on perspectives from Data Feminism and Digital Humanities in the Global South. Our study involves constructing a graph representing the Wikipedia network connections of leading female figures in science and literature from the 19th and 20th centuries. The analysis highlights their connections with influential voices within the region and in the majority world, evaluating the reciprocity and imbalance of these relationships. By leveraging these graphs, we compute an Epistemic Violence Index based on an intersectional set of variables, including gender identity, socio-economic status, and race. This provides an initial step toward quantifying and addressing this persistent issue.

Accordingly, the remainder of this paper is structured as follows. Section 2 provides an overview of key studies on influential hubs within artistic and intellectual communities and relevant graph analytics methodologies. Section 3

introduces the concept of Epistemic Violence and outlines a quantitative approach for measuring it within Wikipedia's intellectual network. Section 4 presents an experimental validation assessing the degree of epistemic violence in Wikipedia articles on Latin American women intellectuals, comparing their network positioning to their connections. Finally, Section 5 summarizes the findings and explores directions for future research.

2. Related Work

The study of influential hubs in artistic and intellectual communities lies at the intersection of digital humanities and graph analytics. Researchers have employed computational techniques and theoretical models to explore how certain individuals or nodes in social networks act as pivotal points for knowledge dissemination, creative collaboration, and intellectual influence. These studies combine network science, sociology, and computational humanities methods, providing insights into the dynamics of cultural and intellectual ecosystems [1]. Thus, the potential contribution of network science to rethinking the dynamics of intellectual history in the humanities and social sciences in Latin America and the world is considerable.

2.1. Graph Analytics and Social Networks

Graph analytics, a key methodological approach in this field, is widely used to model and analyze social networks. In these networks, nodes represent individuals, and edges represent social or professional relationships. Centrality measures, such as betweenness centrality, eigenvector centrality, and closeness centrality, are often employed to identify influential hubs.

One of the earliest theoretical contributions, Freeman's centrality metrics [2] laid the foundation for understanding the roles of nodes in social structures. Betweenness centrality, in particular, has been critical for identifying individuals

who act as "bridges" in artistic and intellectual communities, connecting otherwise disparate subgroups.

The advent of Graph Neural Networks (GNNs) has enhanced our ability to analyze complex social networks. Researchers such as Kipf and Welling [3] introduced methods for semi-supervised learning on graph structures, which have been adapted for identifying hubs in artistic and academic communities. These methods can capture higher-order relationships and provide richer representations of nodes, revealing nuanced forms of influence.

2.2. Digital Humanities and Social Networks in Intellectual Communities

The digital humanities field has embraced network analysis to study historical and contemporary cultural movements. Scholars use computational tools to analyze how collaboration and social dynamics shape intellectual and creative outputs.

A seminal project in this domain is the "Mapping the Republic of Letters" initiative by Stanford University. By analyzing correspondence between Enlightenment thinkers, researchers identified key figures, such as Voltaire and Diderot, as influential hubs facilitating the exchange of ideas across Europe. This project demonstrated how network analysis could uncover the social infrastructure of intellectual movements [4].

In contemporary contexts, projects like the "Art Markets" initiative use network analysis to map relationships between artists, galleries, and collectors. These studies reveal how a few prominent galleries or collectors often serve as hubs, shaping artistic trends and market dynamics [5]. The influence of these hubs is not merely economic but also extends to the promotion and visibility of specific artistic styles.

From a digital humanities perspective, researchers like Klein and D'Ignazio, in their book Data Feminism [6], have explored how social and algorithmic biases impact the visibility of women and marginalized groups in intellectual networks. Network analyses of Wikipedia or academic citation graphs often reveal gendered patterns of influence and invisibility, prompting calls for more inclusive digital archives.

Perspectives on Digital Humanities from the Global South have pointed to the inequalities in the production, distribution and access to knowledge from the Global North and the Global South [7]. In particular, mapping and visualizing intellectual networks with data science and digital humanities tools can help to make visible the historical hierarchies between privileged and marginalized lettered groups and think critically about how gaps and skews in intellectual history may be addressed.

2.3. Graph-Based Studies in Intellectual Communities

The intellectual landscape, particularly academia, has been extensively studied using graph-based techniques to identify influential scholars and interdisciplinary connections.

Studies on citation networks have long dominated this area. Metrics like PageRank, initially developed for web search engines, have been adapted to evaluate the influence of academic papers and authors. For instance, the works of Hirsch [8] on the h-index integrate network principles to quantify an individual's academic centrality.

Co-authorship networks provide another lens for understanding intellectual collaboration. Researchers like Newman [9] demonstrated that scientific productivity and innovation often emerge from highly connected hubs in co-authorship networks. These hubs publish prolifically and bridge disciplines, fostering interdisciplinary knowledge exchange [Newman, 2001].

Recent studies have revealed gender asymmetries in scientific production in different fields and disciplines, arguing that there are persistent inequalities: women scientists are under-represented globally in science citations [10], and data on their participation in specific scientific fields can be challenging to find [11].

The rise of platforms like ResearchGate and Academia.edu has allowed scholars to study intellectual influence in digital contexts. These platforms generate large-scale datasets that can be analyzed using graph techniques to identify trending topics, influential authors, and collaborative patterns[12].

Created in 2001, Wikipedia is a free, multilingual, open-source encyclopedia edited and maintained by a community of volunteer editors worldwide that has revolutionized the creation and circulation of public knowledge. It plays an essential role in the dissemination of knowledge and in establishing avenues of dialogue between academia and the general public. Recent studies on Wikipedia's database of articles and its community of editors have shown that they are shaped by disparities in gender, language and geolocation [13, 14, 15], which are accentuated outside English-speaking communities. However, there is a need for more research on these dynamics in the case of languages such as Spanish and Portuguese [16].

In Latin America, intellectual dynamics are shaped by historical hierarchies of knowledge production and circulation between centers and peripheries [17]. This is why studies on digital platforms such as Academia, ResearchGate and Wikipedia in the Global South need to consider the background of epistemic violence, data colonialism, and cultural domination that shape the region and its history [7].

2.4. Crossovers Between Artistic and Intellectual Networks

Several studies bridge the gap between artistic and intellectual communities, highlighting their interconnected nature.

Cultural institutions like museums and universities often serve as meeting points for artistic and intellectual communities. Network studies of these institutions reveal how they act as conduits for exchanging ideas. For example, the Louvre and the Museum of Modern Art (MoMA) have been analyzed as influential hubs that connect artists, critics, and academics[18].

Platforms like X and Instagram have enabled the study of real-time interactions in artistic and intellectual spheres. Researchers use graph analytics to track how hashtags, retweets, and mentions propagate through networks, identifying users or institutions that amplify discourse. Notably, studies on #BlackLivesMatter and similar movements have highlighted the role of influential nodes in shaping public narratives [19]. Research on #BlackLivesMatter in particular has shown that male activists are overrepresented in users referenced, which makes them more central in networks in platforms such as X, pointing to the need to develop intersectional frameworks to study anti-racist activism [20].

Studies on X have highlighted that referencing and naming women and LGBTQIA+ intellectuals can articulate forms of resistance to the algorithmic hierarchies and infrastructures of platforms such as X, making these figures more visible and creating lineages that centre women and LGBTQIA+ individuals in renewed intellectual traditions [21].

2.5. Discussion

Despite significant advances, several challenges remain in studying influential hubs in artistic and intellectual communities. Historical studies often face limitations due to incomplete or biased datasets. For example, archives may underrepresent marginalized groups, leading to skewed analyses [22]. As Klein and D'Ignazio [6] highlight, algorithms used in network analysis can perpetuate existing biases. Ensuring that the methodologies are inclusive and representative remains an ongoing challenge.

The intersection of graph analytics and digital humanities calls for interdisciplinary collaboration. Researchers must combine technical expertise in network science with critical perspectives from the humanities to fully capture the complexities of influence. Most existing studies analyze static networks, but intellectual and artistic communities are inherently dynamic. Developing methods to analyze temporal changes and evolving hubs is a promising area of research [23].

3. Epistemic Violence

Epistemic violence refers to the systematic marginalization and devaluation of knowledge, contributions, and perspectives originating in the Global South [24], including Latin American intellectuals, artists, and scientists. This phenomenon often manifests as non-reciprocity in the networks of influence and acknowledgement between Global South and Global North intellectuals. Latin American creators are frequently excluded from global academic and cultural discourses, with their contributions either dismissed, appropriated, or underrepresented in citations, collaborations, and historical narratives [25]. For instance, connections between Latin American figures and their counterparts in the Global North are often asymmetrical, where the work of Global South intellectuals enriches or informs Northern projects without reciprocal acknowledgement or integration into canonical histories. This lack of reciprocity reinforces existing hierarchies, as Latin American contributions are treated as supplemental rather than foundational. In artistic and scientific circles, this marginalization is exacerbated by structural barriers, including limited access to funding, international publishing platforms, or exhibitions in globally recognized institutions. Such dynamics create fragmented or invisibilized knowledge networks, perpetuating stereotypes of intellectual dependency while undermining the autonomy and centrality of Latin American actors in shaping global discourses.

3.1. Latin American Intellectual Women on Wikipedia: Biographical Portraits

First, we visualized the general information about each author's article on their respective Wikipedia pages. The Portuguese article on Carolina Maria de Jesus[1] was created in 2007, spans 35,7730 bytes, considered significant, and has undergone 411 edits. With 185 editors and 171,518 visits, it is the most viewed among the 12 biographical pages about the author in different languages.

The Portuguese article on Bertha Lutz [2], on the other hand, is rated as "good quality" by the platform's automated tool, which increases its visibility (it is worth noting that the platform does not justify this category). Created in 2004, the article spans 40.096 bytes, has had 279 edits by 129 editors, and, with 333,449 visits, is also the most frequented page about the author among the 24 languages of her biography.

The Spanish article on Cecilia Grierson [3] spans 31 957 bytes, was created in 2006 and has undergone 592 edits by 269 editors. It is also the most visited page on this intellectual among the 19 languages she has a biography on the platform, with 826,328 visits.

Meanwhile, the Spanish article on Silvina Ocampo [4] is the longest of the four, with 51 222 bytes. Created in 2006, it has received 925 edits and contributions from 333 editors, making it the most edited and collaboratively built article among the selection. It has had 683,580 visits in Spanish, the most visited among the 31 languages of her biography.

3.2. Visibility and Invisibility of Intellectual Women on Wikipedia

We created a graph of link connections between Wikipedia biographies. In this graph, red edges link to the article, blue edges link from it, and green edges link to biographies different from the selected intellectual. Each biography's bubble size is proportional to each node's degree of centrality. To analyze these graphs, we must consider the networks of links and hyperlinks between articles that affect the visibility of biographies. Specifically, if women's articles are poorly connected to other articles, they become more challenging to find. It is essential to clarify that creating links is a complex skill that involves identifying related pages and adding hyperlinks to them, which has significant implications for information retrieval and visibility on the Web. Editors with less technical knowledge or experience may be less aware of the importance of creating inbound and outbound links and might make errors. This impacts the structural centrality in the platform's knowledge network, with consequences for the visibility of these intellectuals' biographies. Such actions can either amplify or combat the existing inequalities and exclusions surrounding intellectual women in Latin America.

The graph shows that Carolina Maria de Jesus's article is relatively poorly connected compared to, for example, the Brazilian journalist Audálio Dantas. Dantas's fame largely stems from his role in first editing Carolina's diary. Some important Brazilian literary writers referenced are Conceição Evaristo, an acclaimed Afro-Brazilian writer whose article does not link back to Carolina Maria de Jesus, and Maria Firmina dos Reis, considered Brazil's first Black novelist, whose article also does not reference her. While the pres-

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[1] https://xtools.wmcloud.org/articleinfo/pt.wikipedia.org/Carolina_Maria_de_Jesus?uselang=pt

[2] https://xtools.wmcloud.org/articleinfo/pt.wikipedia.org/Bertha_Lutz?uselang=pt

[3] https://es.wikipedia.org/w/index.php?title=Cecilia_Grierson&action=info

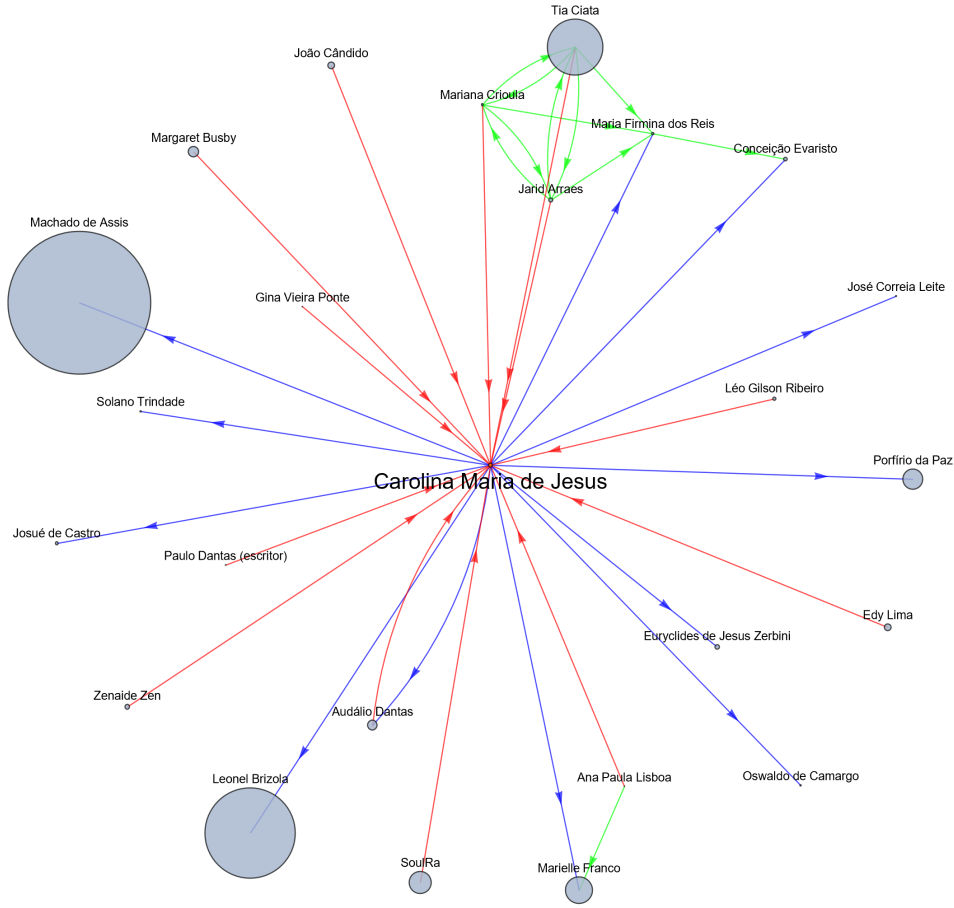[4] https://es.wikipedia.org/w/index.php?title=Silvina_Ocampo&action=info

Figure 1: Carolina Maria de Jesus Connections Graph in Wikipedia

ence of these Afro-Brazilian authors is significant, the lack of connection to other authors in the Brazilian literary canon further marginalizes and renders Carolina Maria de Jesus's biography invisible, minimizing the impact her writing has had on subsequent generations of Afro-Brazilian authors, women writers, and Brazilian literature overall.

Another important intellectual mentioned is Leonel Brizola, then-governor of Rio de Janeiro, who does not reciprocate with a reference to her.

These are important intellectuals. However, given Carolina Maria de Jesus's importance in Brazil's intellectual and literary history, the network illustrates her lack of centrality within the platform's knowledge graph, relegating her to the margins of intellectual history in Brazil and Latin America - a history that the platform has the potential to map. This marginalization reveals the multiple layers of oppression that intersect and compound as gender, race, class, and language interact and amplify their effects [26].

It is also noteworthy that most authors and researchers mentioned in the article as studying Carolina's life and work are not linked because they lack Wikipedia articles, further deepening the marginalization of her work's study.

3.3. Towards an Epistemic Violence Index

Epistemic Violence Index (EVI) quantifies the degree of asymmetric visibility, marginalization, and lack of reciprocity for an intellectual in the Global South relative to Global North peers:

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\begin{aligned}
\text{EVI} = & \ \alpha \cdot \left(1 - \frac{\text{InDegree}_{\text{GS}}}{\text{OutDegree}_{\text{GS}}} \right) \\
& + \beta \cdot \left(1 - \text{Reciprocity}_{\text{GS}} \right) \\
& + \gamma \cdot \left(\frac{\text{Betweenness}_{\text{GN}} - \text{Betweenness}_{\text{GS}}}{\text{Betweenness}_{\text{GN}}} \right) \\
& + \delta \cdot \left(\frac{\text{EigenvectorCentrality}_{\text{GN}} - \text{EigenvectorCentrality}_{\text{GS}}}{\text{EigenvectorCentrality}_{\text{GN}}} \right) \\
& + \epsilon \cdot \left(\frac{\text{Clustering}_{\text{GN}} - \text{Clustering}_{\text{GS}}}{\text{Clustering}_{\text{GN}}} \right).
\end{aligned}
$$

- Indegree / outdegree $\left(1 - \frac{\text{InDegree}_{\text{GS}}}{\text{OutDegree}_{\text{GS}}} \right)$ Measures the ratio of incoming to outgoing references for the Global South, highlighting the asymmetry where outgoing links dominate over incoming ones.
- Reciprocity $= \frac{\text{Number of Mutual Links}}{\text{Total Number of Links}}$ the proportion of bidirectional connections within the network. $1 - Reciprocity$ Captures the lack of reciprocal connections.
- Betweenness centrality measures the Global South intellectual's bridging role compared to Global North intellectuals.
- $\left(\frac{\text{Betweenness}_{\text{GN}} - \text{Betweenness}_{\text{GS}}}{\text{Betweenness}_{\text{GN}}} \right)$ Normalizes marginalization in bridging positions.
- Eigenvector Centrality measures influence disparity.
- $\left(\frac{\text{EigenvectorCentrality}_{\text{GN}} - \text{EigenvectorCentrality}_{\text{GS}}}{\text{EigenvectorCentrality}_{\text{GN}}} \right)$ normalizes influence asymmetry.

- Clustering Coefficient compares network integration for Global South vs. Global North intellectuals.
- $\left(\frac{\text{Clustering}_{\text{GN}} - \text{Clustering}_{\text{GS}}}{\text{Clustering}_{\text{GN}}} \right)$ normalizes exclusion from tightly connected communities.

The EVI combines graph metrics as follows:

- Visibility Disparity: Ratio of in-degree centrality to out-degree centrality. In-degree centrality measures the number of incoming links to an intellectual's Wikipedia page. A low in-degree compared to peers in the Global North indicates a lack of references and visibility. Out-degree centrality measures the number of outgoing links from Wikipedia to other articles. A high out-degree with a low in-degree indicates that the intellectual's work is referenced outward but not reciprocally acknowledged. Asymmetry, the ratio of in-degree to out-degree, can reveal whether the Global South intellectual's work contributes more to the network (out-degree) than they receive recognition for (in-degree).
- Reciprocity Disparity: Proportion of unreciprocated links for the Global South intellectual.
- Positional Marginalization: Difference in eigenvector centrality and betweenness centrality between the Global South intellectual and an average Global North intellectual. Betweenness centrality measures how often a node acts as a bridge between other nodes in the graph. A Global South intellectual with low betweenness compared to peers in the Global North would indicate their marginalization in connecting intellectual or cultural sub-networks, signifying epistemic exclusion. The Eigenvector centrality measures the influence of a node based on the importance of its neighbors. A low eigenvector centrality for Global South intellectuals would highlight their marginal role in a broader, high-impact intellectual network dominated by Global North nodes. Reciprocity measures the proportion of mutual links between nodes. For example, if the page of a Global South intellectual links to many Global North intellectuals but receives few or no reciprocal links, it demonstrates asymmetric visibility and epistemic inequality.
- Network Exclusion: Clustering coefficient disparity and absence from dense intellectual communities. The clustering coefficient measures how well a node's neighbours are connected. A low clustering coefficient for Global South intellectuals might indicate their exclusion from tightly-knit intellectual or cultural cliques common in Global North networks.

Higher EVI values indicate greater epistemic violence, reflecting significant asymmetries in visibility, reciprocity, and marginalization in intellectual networks. A well-connected Global North intellectual with reciprocal and central connections would have a lower EVI. In contrast, a Global South intellectual with poor reciprocity, low influence, and marginalization would have a higher EVI.

Comparing Majority and Minority Worlds Intellectual's Graphs. PageRank is a key metric used to assess the relative importance of a node based on the quality and quantity of its incoming links. When applied to the Wikipedia network, comparing the PageRank of Global South intellectuals to those of the Global North can highlight disparities in perceived authority or significance.

Similarly, the clustering coefficient, which measures how well a node's neighbors are interconnected, provides insights into network integration. A low clustering coefficient for Global South intellectuals might indicate their exclusion from tightly-knit intellectual or cultural cliques that are more prevalent in Global North networks.

Metrics like structural holes and brokerage roles, such as constraint or effective size, further reveal whether Global South intellectuals occupy marginalized positions in the network, limiting their ability to bridge diverse sub-networks or access critical connections.

Lastly, analyzing centralization differences can shed light on broader epistemic inequalities: a highly centralized structure dominated by Global North intellectuals underscores their pivotal role in the network, reinforcing the peripheral status of Global South figures. Together, these metrics offer a comprehensive framework to evaluate and understand structural disparities in knowledge networks.

4. Example: Application of the Epistemic Violence Index (EVI) to Wikipedia Networks

This section demonstrates how we utilized the Epistemic Violence Index (EVI) to estimate epistemic violence between two intellectual networks with differing centrality. Our analysis compares intellectuals from the Global North and Global South.

4.1. EVI for comparing pairs of intellectuals

Consider two pairs of intellectuals, one from the Global North (Marie Curie and Virginia Woolf) and one from the Global South (Carolina Maria de Jesus and Silvina Ocampo). All have Wikipedia pages with varying levels of connectivity and recognition in the global knowledge network. We aim to compute their Epistemic Violence Index (EVI) to evaluate structural disparities in their representation and visibility.

The computed EVI score for Carolina Maria de Jesus is 0.65, which indicates a significant disparity in representation and influence compared to Marie Curie. This score highlights the structural marginalization of Global South intellectuals within the Wikipedia network. It reflects issues like fewer incoming links (visibility), lower reciprocity, and reduced centrality measures, all contributing to epistemic inequities.

This EVI score $(0, 59)$ indicates a significant disparity in Silvina Ocampo's representation and influence within the network compared to Virginia Woolf. The higher disparities in reciprocity, centrality measures, and clustering highlight structural marginalization in the network.

We further test EVI to analyze how it behaves with a selection of nodes from the graph mapping Carolina Maria de Jesus's network of links. For this task, we employ different techniques of normalization. For visibility disparity and reciprocity disparity, we compute the empirical distribution of the data and use the associated cumulative distribution function to obtain a uniform normalization between 0 and 1. For positional marginalization and network exclusion, we rescale the values linearly. We present preliminary results

	In-degree	Out-degree	Reciprocity mutual links out of total links	Betweeness centrality	Eigenvector centrality	Clutering coefficient
Marie Curie						
	150	80	70%	0,45	0,62	0,58
Maria Carolina de Jesus	30	60	40%	0,12	0,15	0,2
	Visibility disparity	**Reciprocity Disparity**	**Betweeness centrality disparity**	**Eigenvector centrality disparity**	**Clustering coefficient disparity**	
	0,5	60%	0,733333333	0,758064516	0,655172414	
Epistemic violence index						
EVI	0,64931405					

Figure 2: Epistemic violence index for Maria Carolina de Jesus compared with Marie Curie

	In-degree	Out-degree	Reciprocity mutual links out of total links	Betweeness centrality	Eigenvector centrality	Clutering coefficient
Virgina Woolf						
	150	100	75%	0,6	0,8	0,65
Silvina Ocampo	40	60	35%	0,25	0,2	0,22
	Visibility disparity	**Reciprocity Disparity**	**Betweeness centrality disparity**	**Eigenvector centrality disparity**	**Clustering coefficient disparity**	
	0,33333333	65%	0,583333333	0,75	0,661538462	
Epistemic violence index						
EVI	0,59564103					

Figure 3: Epistemic violence index for Silvina Ocampo compared with Virginia Woolf

for a selection of nodes linking to and from De Jesus' article (see Table in figure 4).

The table presents Maria Carolina de Jesus's EVI scores with various intellectuals and cultural figures, providing insights into the extent of epistemic violence she experiences in connection with them. The EVI values represent the level of epistemic marginalization, with higher values indicating greater epistemic violence (i.e., lower reciprocity, visibility, and influence in the knowledge network).
Lowest EVI (Less Epistemic Violence, Higher Visibility)

- Euriclides de Jesus Zerbini (0,5413)
- Maria Firmina dos Reis (0,5445)
- Solano Trindade (0,5440)
- Zenaide Zen (0,5456)

These figures have the highest network reciprocity with Maria Carolina de Jesus, suggesting their Wikipedia pages reference her more frequently, reducing her epistemic invisibility.
Moderate EVI (Moderate Epistemic Violence)

- Audálio Dantas (0,5318)
- Marielle Franco (0,5110)
- Soul Ra (0,5220)
- Tia Ciata (0,4987)

These connections exhibit some degree of epistemic inequality but have relatively balanced visibility and references compared to Maria Carolina de Jesus.
Highest EVI (Most Epistemic Violence, Lower Visibility)

- Machado de Assis (0,3456)
- Leonel Brizola (0,4535)

- Conceição Evaristo (0,4337)
- Mariana Crioula (0,4452)

These intellectuals and figures have significantly lower EVI values, indicating that Maria Carolina de Jesus has minimal visibility within their network. This suggests that her contributions are less acknowledged in their biographical links or references, reinforcing epistemic exclusion.

Key Observations *Marginalization in Literary and Political Networks*: Notably, key figures in Brazilian literature like Machado de Assis or Brazilian politics like Leonel Brizola have lower connectivity with Maria Carolina de Jesus, suggesting a lack of recognition of her contributions within the mainstream cultural and historical intellectual canon. It is worth noting that despite being Afro-descendant, Machado de Assis has long been located in the Brazilian literary canon, which explains his low level of reciprocity with Maria Carolina de Jesus.
Higher Reciprocity in Black and Marginalized Intellectual Networks: Figures like Solano Trindade and Maria Firmina dos Reis, both prominent Afro-Brazilian intellectuals and writers, exhibit higher reciprocity, implying that Maria Carolina de Jesus is more visible in networks that focus on racial and cultural resistance.
Audálio Dantas's Role in Visibility: Despite Dantas's instrumental role in publishing Carolina's work, his EVI score remains moderate (0.5318), suggesting a limited reciprocal acknowledgement of her intellectual contributions.

The EVI scores highlight the structural epistemic violence against Maria Carolina de Jesus, particularly in mainstream literary and political networks, where her work is underrepresented. However, she has higher recognition in Black in-

	Marielle Fanco	Audalio Dantas	Conceição Evaristo	Euryclides de Jesus Zerbini	Leonel Brizola	Machado de Assis	Mario Firmina dos Reis	Solano Trinidade	Mariana Crioula	Tia Ciata	Soul Ra	Zenaide Zen
Maria Carolina de Jesus	0.511011	0.531883	0.543375	0.541328	0.453565	0.345631	0.544517	0.544075	0.445206	0.49871	0.522067	0.545631

Figure 4: EVI of Carolina Maria De Jesus' node and her connections

tellectual circles, indicating that her contributions are more acknowledged within historically marginalized knowledge communities. Addressing these disparities requires efforts to interconnect her legacy with wider intellectual traditions.

4.2. Comparing communities of intellectuals

The EVI is now calculated as a weighted average of six distinct measures, each designed to capture specific aspects of network dynamics: visibility disparity, lack of reciprocity, marginalization, lack of influence, exclusion from tightly knit subgroups, and overall lack of connections. These measures are derived from appropriately normalized standard centrality indices, such as degree centrality, betweenness centrality, Eigenvector centrality, and clustering coefficient, all scaled to the unit interval. This normalization ensures that the measures are comparable and can be combined into a single composite index.

In this section, we build on the previous definition of the EVI by using network statistics to assign an EVI value to each node in the graph of interest, rather than comparing pairs of nodes from the Global North and South. This shift simplifies the interpretation of the EVI, making it more intuitive and directly applicable to the analysis of a specific network. By focusing on individual nodes, the EVI provides a clearer understanding of each node's position and influence within the network.

In this updated version (see Table 5), we introduce an additional component based on total degree centrality. This component directly captures the overall centrality of a node, reflecting whether it occupies a central or peripheral position within the intellectual network under consideration. This enhancement ensures that the EVI not only accounts for the nuanced aspects of network dynamics but also provides a straightforward measure of a node's prominence based on its total connections. Together, these improvements make the EVI a more robust and interpretable tool for analyzing network equity and visibility.

The table offers a snapshot of individuals' visibility and influence within a network, quantified by the EVI. This index combines various network statistics, emphasizing both the quantity and quality of connections. Higher EVI values indicate more central and influential individuals, while lower values suggest marginalization or peripheral positions. This approach simplifies the interpretation of network dynamics and underscores disparities in visibility and influence.

The EVI values in the table range from 0.267843 (Solano Trindade) to 1.0 (José Correia Leite). Individuals with lower EVI values, such as Solano Trindade and Porfírio da Paz, are likely marginalized or peripheral, potentially having fewer connections, less influence, or exclusion from tightly knit subgroups. Conversely, individuals with higher EVI values, like José Correia Leite and João Cândido, are more central and influential, likely possessing more connections, greater influence, and integration into tightly knit subgroups. The EVI thus provides a comprehensive measure of an individual's network position, capturing both the extent and quality

Name	EVI
Solano Trindade	0.267843
Porfírio da Paz	0.506283
SoulRa	0.594732
Paulo Dantas (escritor)	0.68851
Léo Gilson Ribeiro	0.692546
Mariana Crioula	0.709194
Gina Vieira Ponte	0.71823
Jarid Arraes	0.726803
Carolina Maria de Jesus	0.782294
Euryclides de Jesus Zerbini	0.808101
Marielle Franco	0.812946
Margaret Busby	0.832776
Audálio Dantas	0.836431
Maria Firmina dos Reis	0.838869
Leonel Brizola	0.845369
Machado de Assis	0.85056
Josué de Castro	0.869641
Ana Paula Lisboa	0.87963
Edy Lima	0.882162
Tia Ciata	0.89429
Conceição Evaristo	0.897475
Oswaldo de Camargo	0.94897
Zenaide Zen	0.99414
João Cândido	0.999655
José Correia Leite	1.

Figure 5: EVI Values of Carolina Maria de Jesus' Contacts

of their connections.

This method of calculating the EVI offers a nuanced yet straightforward understanding of network dynamics. By focusing on individual nodes, it highlights disparities in visibility and influence. The inclusion of total degree centrality ensures the EVI reflects not only the number of connections but also each node's overall centrality. This makes the EVI a valuable tool for identifying key influencers and marginalized individuals within intellectual or social networks, offering insights that can guide strategies to enhance equity and visibility.

5. Conclusions and Future Work

Advancements in graph analytics and the digital humanities have benefited the study of influential hubs in artistic and intellectual communities. From historical analyses of Enlightenment thinkers to contemporary studies of social media interactions, researchers have unveiled the pivotal roles that certain individuals and institutions play in shaping knowledge and creativity. However, future research will be crucial to address challenges such as databases, algorithmic fairness, and dynamic modelling.

The Epistemic Violence Index (EVI) offers a practical framework for addressing disparities in knowledge representation. From a policy perspective, this analysis can inform

the development of initiatives to enhance the visibility of Global South intellectuals by creating more effective inter-linking strategies within platforms like Wikipedia. The EVI score is a powerful quantitative measure to evaluate the impact of systemic biases, enabling researchers and policy-makers to identify areas where representation gaps persist. Additionally, advocacy groups can leverage the EVI to raise awareness about these inequities and advocate for more equitable representation in digital knowledge spaces, fostering a more inclusive and balanced intellectual landscape.

By integrating computational techniques with humanistic inquiry, this field will continue to deepen our understanding of the social fabric of intellectual and artistic life.

6. Acknowledgements

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