



**Decision-making on Wikipedia: An analysis of gender bias
and its impact on discoverability and information retrieval**

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Abstract

Purpose

This study explores the pervasive gender bias in Wikipedia’s editorial decision-making processes, particularly in the Catalan, Italian, and French editions. It examines how these processes—focused on deliberations and voting—affect the representation of gender diversity. Specifically, it evaluates the implications of banning gender-based categories for accessing information, rejecting inclusive language, and the controversial practice of including trans individuals' dead names in biographies.

Design/methodology/approach

The research employs a detailed content analysis of arguments presented during nine deliberative and voting processes conducted between 2014 and 2024. A redesigned codebook was utilized to classify and analyze arguments based on their type and stance toward gender inclusion. The study also coded editors' gender identities, where identifiable, to assess patterns of participation and perspectives within these processes.

Findings

The findings reveal a systemic resistance to gender diversity in decision-making processes, predominantly justified through appeals to values, neutrality policies, and community norms. While arguments supporting inclusivity often emphasized ethical considerations, practical reasoning, and precedence, they were insufficient to sway outcomes in favor of gender inclusion. The lack of consensus and resistance perpetuates the invisibility of gender-diverse identities, reinforcing existing inequalities.

Originality

This research uniquely examines Wikipedia’s decision-making infrastructure and its broader implications for knowledge representation. By highlighting the systemic barriers to inclusivity in collaborative knowledge platforms, it contributes to critical discussions on diversity and equity in digital information systems.

Keywords

Gender diversity; Gender bias, Information retrieval; Knowledge organisation systems; taxonomies; Wikipedia decision-making; Digital gender gap; Inclusive language; Transgender

representation; Collaborative platforms; Taxonomies; Editorial processes; Digital public sphere

1. Introduction

Wikipedia is one of the most consulted sources of information globally, ranking among the top ten most popular websites, behind Google and YouTube, and ahead of ChatGPT (Wikipedia, 2024a). It is also the most used resource in education among students (Konieczny, 2016; Soler-Adillon, 2018). Since 2001, Wikipedia has accumulated more than 40 million articles in 300 languages, and its open editing has radically transformed the production and distribution of information (Wikipedia, 2024b). In this way, Wikipedia has the potential to facilitate more egalitarian knowledge production through co-production and the creation of virtual spaces for debate in the digital public sphere (Hargittai and Shaw, 2015; Firer-Blaess, 2011).

Wikipedia is defined as an intellectual participatory democracy, based on principles of rational deliberation, consensus and negotiation (Black, 2008; Firer-Blaess, 2011). However, its level of decentralisation and openness has been questioned, as it is embedded in a pre-existing social and political model (Hood and Littlejohn, 2018). This is reflected in content such as viewpoint neutrality, absence of original research and verifiability, which hinder the inclusion of diverse constituencies. Moreover, as a platform for knowledge production, it generates disparities in access to sources of knowledge deemed credible by the community and in the assignment of authority (Wyatt et al., 2016). In fact, there is a whole line of research on biases in Wikipedia to improve the quality of its contents related to the representation of linguistic (Callahan and Herring, 2011; Miquel-Ribé and Laniado, 2018),

cultural (Fichman and Hara, 2014), ethnic/racial (Ezell, 2021) or gender (Wagner et al., 2016; Hinnosaar, 2019) diversity. It is well known that Wikipedia suffers from a strong and persistent gender bias, recognised by the Wikimedia Foundation (Gardner, 2011) at different levels, from the community involved in the editing process (the majority of the editors are men) (Lir, 2021; Minguillón et al., 2021) to the content available (biographies of men outnumber those of women and tend to be longer) (Bear and Collier, 2016; Hinnosaar, 2019; Tripodi, 2022).

Studies on the gender gap in Wikipedia identify three main approaches (Ferran-Ferrer et al., 2023): the "women's problem" attributes the gap to female characteristics such as conflict avoidance, competitive behaviours, feelings of isolation and sensitivity to criticism (Eckert and Steiner, 2013; Menking and Erickson, 2015). Second, the "mirror effect" excoriates Wikipedia for reflecting real-world inequalities (Konieczny, 2016; Klein, 2018; Hinnosaar, 2019). Finally, the 'systemic problem' points to the exclusion of women and other groups whose knowledge does not conform to the standards and models established through this infrastructure and a male-dominated community (Ford and Wajcman, 2017). This exclusion is due to an infrastructure inherited from modern encyclopaedia and open source culture, including its architecture, policies and epistemologies, which have generated project-specific biases.

Within the framework of this last theoretical position on the systemic problem, our research proposes to study the decision-making processes that affect gender diversity in Wikipedia by analysing the deliberations on the rules and logics that determine which content has a place and visibility in the encyclopaedia.

We analyse the arguments used to decide which knowledge organisation system (KOS), categories (taxonomies) Centelles and Ferran-Ferrer, 2024a; 2024b) or which heading

(authority control for authors) will be used in the information architecture, which represents parcels of reality through specific labels that facilitate the search and retrieval of information (Morville and Rosenfeld, 2007; Pérez- Montoro, 2010) as well the possibility of using inclusive language (Gygax, 2019).

Specifically, we have studied, on the one hand, the case of the Italian and Catalan Wikipedias which, through debate and voting, have banned the use of the categories "women" and "non-binary people" as elements of access and retrieval of content on this digital platform. In this sense, although most Wikipedias, such as the English, French, Portuguese and Spanish editions, have categories that make a distinction on the basis of gender identity, Catalan and Italian Wikipedias do not allow it. Moreover, this decision that rejects categorisation by gender generates some dysfunctions, such as, for example, the Catalan category "morts de càncer d'ovari" (deaths from ovarian cancer, Q7214842), which is expressed in masculine, or "dones barbudes" (bearded women, Q8294508), which is the only one accepted with feminine gender. In addition, gender inclusivity in language is a recurring theme among editors of the various editions of Wikipedia. The English Wikipedia, in fact, has editing style manuals that address the treatment of neutral pronouns and other formulae to avoid the use of the male gender or sexist and transphobic biases in the use of language (Wikipedia, 2024c). However, some editions of Wikipedia, such as the Italian, Spanish and Catalan editions, have not incorporated manuals in this regard, and the referents used when drafting articles (the national language academies) mostly advocate the non-incorporation of neutral formulas favourable to non-binary gender identities, which usually results in a ban on the use of these formulas in the edition. In order to better understand this dynamic, we have studied the deliberations around inclusive language with non-binary identities in the Italian edition of Wikipedia. On the other hand, we have analysed the recent case of the deliberation and vote on the French Wikipedia in which the decision was made to make the birth name (pre-transition or dead name)(Stanborough, 2020) of trans* persons visible instead of respecting the "meaningful name" chosen by the person according to their gender identity. This decision is in line with the practices of most national library catalogues with authority control of standardised authorship headings (Angell and Roberto, 2019) and even ORCID identifiers that uniquely identify scientific staff. In contrast, reference institutions such as APA Publishing together with 50 publishers (since 2020) or the American Library Association (ALA), with its journal College & Research Libraries (since 2022), use the meaningful name or preferred name of trans* authors (Lazet and Watson, 2022). In the specific field of Wikipedia, there are linguistic editions such as the English one that state that the use of the pre-transition name should only be included in the introductory summary if the person was notable under that name, and, on the other hand, the body of the article indicates that the previous name (dead name) should not be mentioned. The German Wikipedia states that a balance must be struck between the protection of the private sphere and the public's legitimate interest in knowing relevant information. Ongoing discussion was held from 2021 to 2023 that did not result in a decision, and the possibility of launching a preliminary survey on the discussion page of the decision-making project was mentioned, but apparently never carried out.

1.1. Systemic issue: Community infrastructure, policies and standards

Authors Ford and Wajcman (2017) identify factors that, despite Wikipedia's theoretical openness, discourage female participation and perpetuate gender bias in its content and community. Wikipedia's technical infrastructure, characterised by complex code and editing tools, can represent a significant barrier to new female editors. This is compounded by

community policies and rules, which, while designed with the intention of being neutral, often reflect the perspectives of the male majority that dominates the community. In addition, the culture of the community is often perceived as confrontational or unwelcoming, which further contributes to discouraging women from contributing to or continuing to be active on the platform (Ferran-Ferrer, et al. 2021).

In terms of technical infrastructure, categorisation is a key tool to organise the representation and access to content in a logical and coherent way, facilitating the navigation and search for information. Articles should be classified into relevant categories, as specific as possible, and respecting the established hierarchy to ensure an orderly structure. Categorisation, as well as the wording of articles, should be neutral, avoiding the inclusion of value judgements and maintaining a descriptive approach that accurately reflects the content without bias (Wikipedia, 2024d; 2024e)¹. These elements of information access are part of the KOS or knowledge organisation system, which organise and manage information through structured concepts and terms, facilitating access and navigation in libraries, databases, archives and information systems (Hodge, 2000).

The language used in both categories and content follows the principle of linguistic neutrality promoted by Wikipedia (Wikipedia, 2024c; 2024d; 2024e; 2024f). However, it is governed by the rules stipulated by language academies such as the Real Academia Española (in the Spanish edition) or the Accademia della Crusca (in the case of the Italian edition). These academies advocate a use of language that is not incompatible with inclusive formulas, for example, through the use of person nouns in the plural (Real Academia Española, 2020). However, their rules also include explicit support for the use of the masculine plural as generic and the rejection of other less sexist or androcentric linguistic formulas (L'Apòstrof, 2021), or the use of the "e" in Spanish or the "ə" in Italian (Accademia della Crusca, 2024a; 2024b). Decision-making combines consensus, established policies and the intervention of administrators, expert editors voted by the community who possess privileges and authority (Wikipedia, 2024g). When consensus is not achievable, collaborative voting is used, as in the Catalan, Italian and French Wikipedias regarding inclusive categories and policies (Wikipedia, 2024h). In these cases, participation in voting usually requires fulfilling certain criteria such as having been registered for a certain length of time and having a minimum number of contributions, as in the Spanish Wikipedia (Wikipedia, 2024i). Thus, this study analyses the editorial processes in Wikipedia that define key principles for organising knowledge. These processes operate under a consensual democracy, where rules and decisions are constructed through a consensus of opinions, seeking to include minorities.

Although consensus does not require taking a vote, the closure of deliberations, and thus the final decision, lies with community managers (CIO Wiki, 2024; Wikipedia, 2024f; Reagle, 2010; Forte and Bruckman, 2008).

1.2. Systemic problem: The culture of the community

The community operates under a model of distributed authority, in which experienced editors often take on more responsibilities and roles. This informal organisational hierarchy should be understood not as additional editorial power, but as the application of community consensus. When editorially "problematic" processes emerged, such as the process of deciding what is accepted as content in the encyclopaedia and what is not, for example, a hierarchy was created within the editors (Lih, 2009), thus introducing the figure of the administrator who

enforces Wikipedia's rules much more drastically than other users by blocking or deleting them.

Access levels on Wikipedia range from anonymous users to administrators and bureaucrats with special permissions. Roles include editors, administrators and bureaucrats, whose privileges increase according to experience and criteria such as seniority and number of edits. Permissions vary: administrators can delete pages, block users and protect content; bureaucrats assign roles but do not manage content directly. These roles are not hierarchical, but elected by the community based on contributions, policy adherence and trust, with specific criteria for voting and candidacy (Wikipedia, 2024j).

Wikipedia's taxonomy, like its category system, is created and approved in a decentralised way by administrators (Centelles and Ferran, 2024a; 2024b; Vander Wal, 2007). Although editors can create categories, they are often quickly removed if they do not comply with the rules. In some cases, a process of deliberation or voting is initiated, as was the case in the Catalan, French and Italian editions discussed in this study.

2. Objectives

This research addresses gender biases in Wikipedia, focusing on its infrastructure: its knowledge organisation system (KOS) through taxonomic categories and authority control (Jiménez Pelayo, 2024). We analyse how power dynamics in decision-making processes affect the discoverability and retrievability of gender identities in the Catalan, French and Italian editions.

Our study examines: 1) the categories for gender identities of women and non-binary people (Catalan and Italian editions); 2) the use of inclusive language (Italian edition) and; 3) the treatment of the birth name of trans* people (French edition), exploring the dynamics that shape the representation gender diversity in Wikipedia. All this in order to understand the dynamics that influence the representation of gender diversity on digital platforms, in this case Wikipedia.

In line with this objective, we set out to answer the following research questions:

RQ1: How does decision-making (deliberation and voting processes) take place in the Wikipedian community regarding the display of gender diversity on Wikipedia?

RQ2: What arguments are used in decision-making processes on gender diversity?

3. Methodology

This article examines the decision-making processes in Wikipedia, focusing on the Catalan, Italian and French editions, and analyses the arguments related to the representation and accessibility of gender identities. To do so, the deliberations and votes were analysed, classifying the arguments according to their typology and their positioning with respect to the diversity of gender identities. The corpus of arguments, compiled between March 2022 and March 2024, covers the deliberation in the Catalan, Italian and French editions of Wikipedia and forms the basis for analysing editorial dynamics in decision-making. These arguments were analysed using a codebook redesigned from the conceptual framework of Schneider, et al. (2013) (see Table 1). This adaptation not only considers the original principles used to study arguments in article deletion processes and their relationship to the track record and

credibility of editors but extends them to examine gender bias and its impact on editorial deliberations in greater detail (see Table 1, subcategories of "Values"). Each argument was classified according to its stance towards gender identity diversity: "for", "against" or "neutral" (an option that rejects the proposals of the debate but proposes other proposals). In addition, a frequency analysis was conducted to identify predominant patterns in the typologies of arguments, providing a more accurate picture of the argumentative dynamics (Miles et al., 2014).

PASTE HERE Table 1. Codebook. Source: Tedesigned by the authors from Schneider, et al.

The gender of the editors participating in the discussions was coded following the methodology of Minguillón et al. (2021). This analysis was based on the "user pages", identifying pronouns and adjectives used by people to define themselves, without assuming as definitive the gender declared in the interface profiles, given that this may be conditioned by ignorance of options, personal decisions or the absence of appropriate categories at the time of creating the account, such as the lack of the "user" option in feminine or non-binary gender option.

The first author performed the coding manually using ATLAS.ti software (Hwang, 2008). This process covered the Catalan and Italian Wikipedias between May and June 2022, and the French Wikipedia in March 2024.

4. Results

This section presents the results of the analysis of the process, highlighting the dynamics of consensus and the key roles of the participants, as well as the analysis of the arguments used in these processes.

4.1. Analysis of the decision-making process

Nine decision-making processes were analysed in three Wikipedia communities: four in Catalan (CAT), four in Italian (IT) and one in French (FR), the latter with the highest participation (see Table 2).

Table 2 details whether each case corresponded to a deliberation or a vote, the issue addressed (categories of "women" or "non-binary people" in the knowledge organisation system, use of inclusive language or the dead name in control of authorities), the duration, the number of participants, the votes in case of a vote, and the final decision taken. Each process is identified with a unique code from P1 to P9.

PASTE HERE Table 2. Summary of decision-making processes on gender diversity in the Catalan, Italian and French Wikipedia's editions (2015-2024). Source: Created by the authors.

In the Catalan Wikipedia, the processes resulted in a refusal to categorise with a gender perspective, but a consensus was generated to implement a gender search engine in the index of categories (Viquipèdia, 2024; Wikipedia, 2024k). The Italian Wikipedia advocated the creation of specific categories for women (P7), categories for women in humanities (P5) and in science (P6), as well as the adoption of an inclusive form of language with the spelling "Ə". The French Wikipedia conducted a key deliberation on the inclusion of the dead name in biographies of trans* people, motivated by recurring editorial conflicts. The consultation addressed three main aspects: the mention of the birth name in the introductory summary, its

inclusion in the body of the article, and its appearance in the information box, especially in cases where the person's notoriety preceded their transition. In all cases, the consensus was in favour of not including gender diversity.

Participation varied by community, reflecting differences in the overall number of users. In the Catalan Wikipedia, 43 unique users participated: 30 men, 10 women and 3 of unspecified gender. The Italian edition had 50 participants: 27 men, 5 women and 18 of unspecified gender. The French Wikipedia had 383 participants: 77 men, 51 women (7 trans*), 5 non-binary and 250 with no gender specified. The number of votes was lower than the number of participants, as not all users voted, or their votes were invalidated due to non-compliance or withdrawal by the users themselves.

PASTE HERE Figure 1. Wikipedian volunteer positions on gender diversity in decision-making processes (Catalan, Italian and French Wikipedias' editions, 2014-2024), by gender. Source: Created by the authors.

Of the participants, men (n=134) were 28% against gender visibility and LGTBI+ rights, while women (n=67, including trans* women) stood out with 14% in favour. Participants identified as non-binary (n=5) represented 1%, with positions exclusively in favour of visibility. The majority (n=272, 56.9%) did not specify their gender (see Figure 1).

4.2. Analysis of the arguments of decision-making processes

The arguments used in the decision-making processes were analysed, and it was observed that the number of arguments analysed increased proportionally with the number of comments made by the single participants during the deliberations.

4.3. Wikipedia in Catalan: categories of women and non-binary people

The results show a remarkable variability in the discussions on the system of knowledge organisation in the Catalan Wikipedia. In all three processes, the final decision was to reject the inclusion of gender diversity in the categories (see Figure 2). Participation increased in the first two deliberations, culminating in a key vote that implemented a gendered search engine. This influenced the third discussion (Q4), with only six comments and a greater inclination in favour of the non-binary category, to end in a quick deletion, with similar results to the previous deliberations. This increase in participation was accompanied by a gradual increase in "neutral" positions, possibly due to the adoption of rejection accompanied by a constructive proposal for a solution with a gendered search engine.

PASTE HERE Figure 2. Argumentative positions in decision-making processes on the representation of gender identities in the Wikipedia in Catalan (2015-2022). Source: Created by the authors.

Of the total number of comments (N=336), 76.9% were made by men (n=258) and 15.7% by women (n=54), with the remaining 7.3% made by people whose gender could not be determined (n=24). The predominant positions were neutral (n=123; 37.3%), followed by positions against (n=92; 27.9%) and in favour (n=56; 17%). The neutral position included proposals to mitigate the prohibition of gender categories, showing an intermediate approach between rejection and acceptance.

PASTE HERE Figure 3. Typology of arguments according to frequency of use in decision-making processes on the representation of gender identities in the Wikipedia in Catalan (2015-2022). Source: Created by the authors.

In the first debate (Q1), 121 arguments were recorded. Positions in favour of the argument were dominated precedents (25.9%) and analogies (22%). User Ser2 (female, 2022) for example, highlighted the existence of the "categoria:dones barbudes" (bearded women) in the Catalan Wikipedia as an analogy and continues to be an accepted category. O Suo (male, 2015) described his experience as an editor and offered his reasoning on the categories according to gender identity, considering that it would not segregate and would favour access to less accessible content. In contrast, value-based arguments predominated among opponents (25.9%). Editor Mse (female, 2015), an opponent of the proposals, stated, "now we are doing very well and it's a mess to get into the issue of people who don't identify with their birth gender, don't have to be on the case of their fellow-individuals, besides now that there are so many different genders because it segregates. We are all the same and we are all in the same bag". There are also counter-arguments that expose sexism as a negative consequence of the initiative to make gender identities visible, such as the contributions of an editor: "With the current content, this category should read Category:Members of a female collective. If we wanted to make Category:Women, it would have to be all of them, but then there would be impunity to separate Barcelona Mathematicians (male) from Barcelona Mathematicians (female), and this seems sexist to me because there are far more relevant criteria" (Alo, man, 2014).

Neutral" positions (rejection, but with proposals) prioritised practical reasoning (26.6%). In P2, with 177 arguments, those in favour highlighted evidence and practical reasoning (22%), while those opposed were based on values (25%) and gender values (20.8%), arguing that gender categorisation discriminated against women (see Figure 3). In the vote (Q3), 32 arguments were identified. Those in favour defended categorisation as combating gender discrimination (27%) and appealed to rules and expert knowledge (18% each). The last discussion (Q4), with only six arguments, was marked by analogies and precedents (two each), influenced by previous debates and similar external cases.

4.4. Wikipedia in Italian: women's category and inclusive language

The decision-making processes in the Italian Wikipedia on categories and inclusive language reached similar consensuses to those in the Catalan Wikipedia, although without constructive consensus, rejecting gender mainstreaming in organising and retrieving information on minoritised gender identities (See Figure 4).

In the four processes (P5-P8), 50 people participated (27 men, 5 women and 18 of undetermined gender), generating 317 arguments. In P5 (45 arguments), women led the proposition, while men showed a balanced approach. In P6 (70 arguments), male representation grew, with men standing out against, while women continued to predominate in favour. P7 (124 arguments) was the most active process, with men diversifying their positions between pro and neutral, and women consolidating their support. People of unspecified gender maintained a neutral contribution. In P8 (78 arguments), women again led the way in favour, while men were more inclined to reject. Despite efforts to reach neutral consensus, all processes ended with rejection of the proposals.

PASTE HERE Figure 4. Argumentative positions in decision-making processes on the representation of gender identities in the Wikipedia in Italian (2021-2022). Source: Created by the author.

A total of 317 arguments between the four processes were recorded in the analysis. During the P5 vote, the position in favour of proposing women-specific categories (44%) maintained the pre-eminence of precedent arguments (35%), accompanied by those related to gender values defending categorisation as a way of making women visible (20%). In this sense, Ail (woman, 2021), defended the incoherence of the elimination of the category "Women in the humanistic discipline by exposing the existence of other gender such as "Women in the Italian Resistance".

Meanwhile, the opposing position (31%) focused their arguments on values (19%) to ethically question the proposals. In P6, the stance on the categories of women in science (32%) again used the precedent argument (32%) as the main resource. For example, Kri (male, 2021) showed from this position the casuistry that would be caused by the manual creation of this category, by the addition of women whose sources and relevance did not meet the requirements of the community to be found within Wikipedia.

In P7, the position in favour of gender categorisation and inclusive language also predominated (37%), mainly supported by arguments of precedent (33%) and then by practical reasoning (20%). Finally, in P8, the favourable stance (50%) also led, with cause-effect (50%) and precedent (25%) arguments standing out (see Figure 5).

PASTE HERE Figure 5. Typology of arguments according to frequency of use in decision-making processes on the representation of gender identities in the Wikipedia in Italian (2021-2022). Source: Created by the authors.

4.5. Wikipedia in French: trans identity (use of dead name)*

The results of the analysis show a division in French Wikipedia community during the P9 vote, with 384 participants. 45.8% (n=176) supported the will of the trans* community to exclude the dead name in the sections discussed, while 50.7% (n=195) defended its inclusion for contextual relevance or encyclopaedic interest. 3.4% (n=13) adopted a neutral stance, seeking consensus between the two positions.

Analysis by gender revealed marked differences. The majority of trans* women (n=7) and non-binary people (n=5) strongly supported the exclusion of the dead name, except for one trans* woman. In contrast, men mostly defended its inclusion (57.1% against the LGBTI+ community's proposals and 39.6% in favour), highlighting a tendency towards keeping the dead name in the articles.

PASTE HERE Figure 6. Typology of arguments according to frequency of use in decision-making processes on the inclusion of the dead name in the body of the article in the Wikipedia in French (2024). Source: Created by the authors.

The discussion on the French Wikipedia, unlike other communities, reflects a clear dichotomy between positions in favour of respecting the wishes of trans* people and those that prioritise Wikipedia's existing policies. The opposing stance to remove the dead name predominated with arguments based on values of the Wikipedian community (32% of the total), as for example represented by users such as Bip (male, 2024), who expressed the encyclopaedic interest necessary to understand the life of the person biographed in question. On the other hand, the arguments in favour stood out for gender- related values (26.9%), defending the wishes of the trans* community, and ethical values linked to the principle of doing no harm (26.5%), as expressed by Ura (male, 2024), stating that the redirection was sufficient to solve any problems of confusion, and that there was scientific evidence of negative effects on the mental health of trans* people due to the memory of their dead name.

5. Discussion

This study has revealed the tensions and challenges underlying editorial decision-making processes in Wikipedia, specifically around the inclusion of categories and terms that address gender diversity. Although information and communication technologies have opened up a scenario that facilitates pluralism and promotes new forms of expression (Van Dijck, 2012), the supposed equality of access inherent in this interconnected public sphere has been questioned by feminist authors, who highlight a persistent neglect of gender issues in this context (Guerra-Palmero, 2019). Ideally, the public sphere is the social space where public opinion is generated through communicative interaction to reach consensus. However, feminist theories criticise that this space excludes women and dissident gender identities, relegating them to the private sphere and perpetuating inequality (Pateman, 1988; López Sánchez, 2019). Mouffe, on the other hand, questions the idea of a consensus based on impartial rationality, stressing the importance of recognising the inherent plurality of society (Mouffe, 2000).

While broadening the public sphere to include women and LGBTIQ+ people might seem the ideal solution, feminist authors such as Landes and Young do not support this idea. On the contrary, they argue that the public sphere is inherently gender-biased, universality tends to be homogenous in order to maintain impartiality, thus silencing difference and diversity (Young, 1989; Landes, 1992). In this sense, Benhabib (1992) suggests that, in order to include women in the public sphere, they must participate in a universal dialogue with full rights and their specificity must be recognised. In contrast to Habermas's universal community of communication, Benhabib postulates the need for a community of solidarity that balances equality and differentiation, arguing for a feminised public sphere. In line with the pluralism advocated by feminist authors, the inclusive recognition of difference in terms of gender identity and sexual orientation prevents the reproduction of heteronormative, cisgender and binary knowledge biases in the public sphere (López Sánchez, 2019). In this way, the inclusion of the LGBTIQ+ population could not be reduced to one constructed in universalising terms aligned with the "sociosexist logic" (López Sánchez, 2019), which assumes the cisgender and heterosexual prototypes of life as desirable with the aim of bringing sex-gender dissidences "closer to the 'acceptable', the 'normal', in accordance with a validated and recognised social aesthetic" (López Sánchez, 2019, p. 19).

Digital media have also generated unprecedented opportunities for collaborative production, with

Wikipedia standing out as one of the leading examples globally (Firer-Blaess, 2021; Beytía-Reyes and Wagner, 2022). However, this platform, which presents itself as an open and participatory space, reflects a power structure that not only perpetuates gender inequalities in content and participation dynamics, but in some cases also amplifies already existing biases in society (Ford and Wajcman, 2017). The study of Wikipedia therefore calls for critical reflection on the configuration of the digital public sphere and the new forms of organisation that emerge within it.

Existing studies indicate that the gender gap in Wikipedia is not only a problem of quantitative participation (more men than women and non-binary people in the editing community), but also qualitative, in terms of how the norms, knowledge organisation systems (KOS) and cultural values of the community affect editorial decisions. These dynamics perpetuate an epistemological structure that excludes minority gender perspectives, rendering their experiences and knowledge invisible in a digital space that, ideally, should reflect a plurality of voices.

Several studies have shown a bidirectional relationship between the Wikipedia content gap and the participation gap (Bear and Collier, 2016; Beytía-Reyes and Wagner, 2022; Cabrera et al., 2018). The gender gap among Wikipedia editors favours an overrepresentation of articles of male interest, resulting in insufficient coverage of women-related topics and a disproportionate number of male biographies (Bear and Collier, 2016). This cycle reinforces the 'glass ceiling', where editors tend to favour their own group (Konieczny, 2016; Klein, 2018).

Our study also highlights the issue of non-binary identities in Wikipedia. In the Catalan Wikipedia, the category of "non-binary people" was briefly discussed and ultimately rejected without a thorough deliberative process underlining the resistance to recognising and making visible gender identities that do not conform to traditional binary norms (Stanborough, 2020). This exclusion reflects a lack of understanding and acceptance of gender diversity in the Wikipedian community. Although the Italian Wikipedia has not reached this debate, the contextual premises so similar to the situation of the Viquipèdia (the Catalan edition) could show a similar resolution.

Another aspect to highlight is in relation to Wikipedia's editorial recommendations as a form of jurisdiction that legitimises the exclusion of non-hegemonic gender identities. In the deliberations of the Catalan Wikipedia, community norms are used as a barrier to the inclusion of gender categories, which contrasts with more inclusive practices observed in other editions of Wikipedia, such as the English or Spanish editions. This use of rules in a form of normalisation based on "soft disciplining" (Firer-Blaess, 2021) perpetuates power inequalities between users and reinforces the invisibility of gender other than cisgender men. Previous studies point out that gender homogeneity among the experienced volunteer editor reinforces the exclusion of alternative perspectives, perpetuating a cycle of power that marginalises women and other gender identities on the platform (Bear and Collier, 2016). However, it is striking in our analysis that opposition to the category "women" on the Catalan Wikipedia is most strongly opposed by editors who identify as women. This factor points to the need to question the linear correspondence between the presence of women editors and the progressive establishment of feminist policies of gender inclusivity at all structural levels of Wikipedia. It also indicates that this analysis cannot take place only in terms of gender identity, but that other aspects that potentially influence positions can also be considered, such as whether women users have sufficient status to participate in deliberations or their adaptation and consequent potential conformity to the androcentric logics of the community.

In spite of applying a manual methodology respectful of gender self-identification (Minguillón et al., 2021), our study has the limitation of not being able to determine the gender identity of the majority of users in the processes analysed, due to the lack of specification. This makes it difficult to understand how gender identity influences the positions in favour, neutral or against gender visibilisation in Wikipedias. According to the same work cited by Minguillón et al. (2021), for example, in the Spanish Wikipedia, only 11.6% of the editors are women, which is partly attributed to the fact that many choose not to reveal their gender in their profiles, possibly to avoid bias or discrimination.

Resistance to including gender categories and respecting identity diversity reflects ideological and cultural unwillingness rather than technical limitations. As platforms such as Google Scholar and projects in international libraries (Lazet and Watson, 2022) have shown, there are technological tools that allow inclusive categories to be integrated and managed without compromising efficiency or neutrality. In the Catalan Wikipedia, a gender search engine was implemented in the categories of professions as a consensus measure in one of the discussions analysed. However, the implementation of the technological solution was not carried out optimally in terms of compliance with usability and user experience standards, possibly due to a lack of full commitment to the idea, influenced by the prevailing resistance in the majority culture towards its acceptance.

In Wikipedia's cultural context, uniformity is prioritised over diversity and insufficient effort is put into understanding and incorporating the reporting practices of minority communities such as women and LGBTIQ+ people (Kitzie et al, 2022). In addition, decision-making processes (deliberations and voting) need to specifically consider the labour force involved in dealing with the gender gap for editors with minority gender identities and gender-sensitive users (Jankowski, 2024).

6. Conclusions

This research has analysed a selection of deliberations concerning the inclusion of the categories of "women" and "non-binary people" in the knowledge organisation systems of the Italian and Catalan Wikipedias. We have also examined the deliberations concerning the use of inclusive language (through the neutral Italian spelling "ə") in the Italian Wikipedia and the public appearance of the dead name in the biographies of trans* people in the French edition of Wikipedia. This research is particularly relevant to highlight the origin of gender bias and its impact on the ability to search, navigate and retrieve information in digital environments. The limited access to content about people with non- hegemonic gender identities from diverse backgrounds not only hinders their visibility, but also perpetuates their invisibility in

a digital space where the gender gap is already widely documented and recognised (e.g., Beytía-Reyes and Wagner, 2022; Ferran-Ferrer et al., 2023).

In the cases of Catalan and Italian Wikipedia, the refusal to categorise content related to "women" and "non- binary people" shows a clear resistance to recognising the specificity of these identities. This rejection not only hinders access to gender-related content, but also reinforces a universalist and androcentric paradigm. As Bear and Collier (2016) point out, the lack of representativeness in taxonomies limits women's ability to feel represented and valued in the community. And specifically in the case of the Italian Wikipedia, by rejecting the use of

the linguistic proposal with the neutral spelling "ə", it opts for a language that invisibilises non-binary gender identities, curbing the potential of this linguistic strategy for the inclusion of non-binary gender non-conforming people (Ferrarons & Llagostera, 2024).

All in all, our research shows that minoritised gender identities (such as women, trans* and non-binary people) face limited opportunities to influence the transformation of Wikipedia. This is because the platform is based on an infrastructure grounded in policies and regulations that condition epistemological logics, defining how knowledge is organised and accessed.

On the other hand, the case of the French Wikipedia highlights the controversy surrounding the use of the dead name (or previous name) of trans* persons. While some arguments justify this practice as necessary for the control of authorities, for the management of uniform authorship names, for the historical and contextual accuracy of biographies, this position overlooks the negative emotional and social impacts that these decisions have on the individuals concerned, perpetuating transphobia and limiting gender self-determination (Angell and Roberto, 2019).

This dynamic highlights, on the one hand, a formal hierarchy, related to the criteria that establish who can participate in deliberations and who cannot, who can vote and who cannot; and an informal hierarchy within the community, where more experienced editors tend to dominate debates, using repetitive arguments to block changes, as previous research on the power structure in Wikipedia also points out (Ford & Wajcman, 2017).

A detailed analysis of the arguments used in the discussions of the three language editions of Wikipedia (Catalan, French and Italian) shows a predominance of anti-inclusion positions, based on subjective values and community norms that reflect a rigid and exclusionary interpretation of neutrality policies, established by the Wikipedians themselves. In contrast, arguments in favour of gender visibilisation were mostly supported by precedents and practical reasoning that seek consensual solutions, although their impact was limited due to the lack of community support in the votes. In conclusion, it is essential that Wikipedia's policies be reviewed and updated to reflect a commitment to gender diversity and inclusion.

This includes adopting more inclusive and pluralistic practices that facilitate content retrieval, as well as implementing measures that promote greater participation of women and other gender identities on the platform, and at the same time, governance processes must move towards more inclusive values that promote equitable access to information and achieve a broad and truly pluralistic consensus in the digital public sphere of Wikipedias.

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Table 1. Codebook. Source: Redesigned by the authors from Schneider, et al. (2013)

Category	Subcategory	Description
Analogy	N/A	Reference is made to similar cases outside Wikipedia. For example, it is compared to decisions taken in public institutions with regard to the cataloguing and classification of their contents.
Cause-effect	Generic	When the article lacks structure, the wording is not sufficiently encyclopaedic, etc., then the effect is the outlined decision.
Cause-effect	Sources	In case there is a lack of sources of information.
Verbal classification	N/A	Arguments using or quoting definitions for specific concepts are used.
Lack of knowledge or ignorance	N/A	Assumptions are made when there is no evidence or a lack of knowledge about the subject or the field of the knowledge of what is being debated.
Waste	N/A	It is intended to avoid loss of work or effort. Coded when reference is made to when it is a waste to lose the effort invested.
From evidence to hypothesis	N/A	Evidence is provided, including contrasting data, examples or references to support the argument. A shorter label will be created that is termed "Evidence".
Need for help		Other editors are requested to help.
Rules	Generic	Reference is made to policies and regulations of Wikipedia.
Rules	Notability	Relevance policy (WP:N)

Knowledge position	N/A	It is stated that the editor has professional knowledge of the subject under discussion.
Precedents	N/A	References are made to past discussions, and a Wikipedia 'jurisprudence' is generated to guide how to act in the same situation
Practical reasoning	N/A	Actions are taken towards a goal or objective, i.e. practical or easier to implement solutions to achieve consensus or the end of the debate.
Bias	N/A	It is considered to be promotional or there is a conflict of interest.
No reason given	Generic	No explanations are given.
No reason given	Previous arguments	When this is used on the basis of previously offered comments.
Values	Generic	A value judgement is offered in the contribution. For example, evaluations are given based on one's own values or their value is demeaned or exalted according to personal criteria.
Values	Ageism	Assessments based on age-related values.
Values	Wikipedia community values	Values-based evaluations of the Wikipedian community.
Values	Gender	Valuations based on conceptions of identity and gender perspective.
Values	Sexual orientation	Evaluations based on conceptions related to sexual orientation.
Gender Identity	Male/Female/Non-Binary/NE	The number of the participating person nothing shall be determined from the user page.

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Table 2. Summary of decision-making processes on gender diversity in the Catalan, Italian and French Wikipedia's editions (2015-2024). Source: Created by the authors.

WP	Process	Theme	ID	Dates	Participants	Votes	Decission
CAT	Deliberation	SOC: Category 'women'	P1	2014 (27 days) 2015-17	12	N/A	Rejection
CAT	Deliberation	SOC: Category 'women'	P2	(31 days, plus one in 2017)	15	N/A	Subsequent vote
CAT	Voting	Category of women	P3	2018 (1 day)	28	21	Solution: Implement gender search
CAT	Deliberation	SOC: Categor 'people non-binary'	P4	2022 (1 day)	3	N/A	Rejection
IT	Voting	Categories of women in the humanistic discipline	P5	2021 (5 days)	17	17	Rejection
IT	Voting	Categories of women in science	P6	2021 (16 days)	23	23	Rejection
IT	Deliberation	Categories specific to women	P7	2021 (132 days)	29	N/A	Rejection
IT	Deliberation	Inclusive language: symbol "ə" as gender neutral	P8	2022 (33 days)	9	N/A	Rejection
FRA	Voting	Control of authorities: use of the dead name in the article	P9	2024 (11 days)	383	361	Rejection

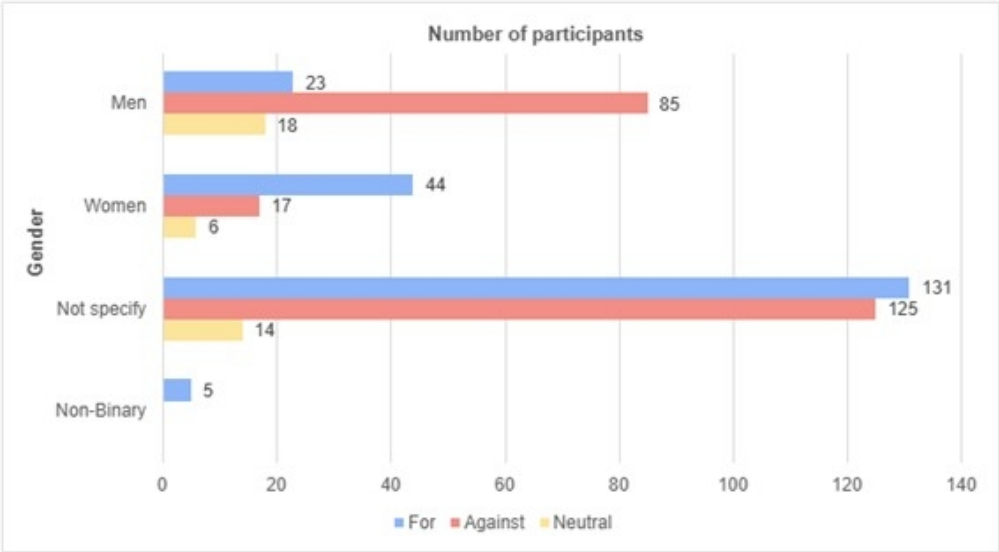


Figure 1. Wikipedian volunteer positions on gender diversity in decision-making processes (Catalan, Italian and French Wikipedias’ editions, 2014-2024), by gender. Source: Created by the authors.

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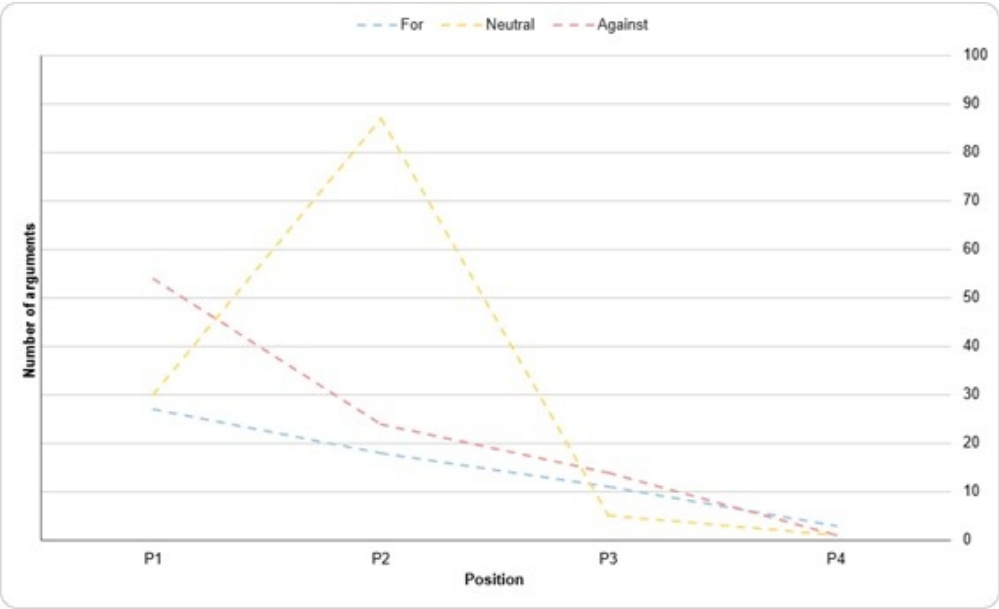


Figure 2. Argumentative positions in decision-making processes on the representation of gender identities in the Wikipedia in Catalan (2015-2022). Source: Created by the authors.

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Figure 3. Typology of arguments according to frequency of use in decision-making processes on the representation of gender identities in the Wikipedia in Catalan (2015-2022). Source: Created by the authors.

188x117mm (96 x 96 DPI)

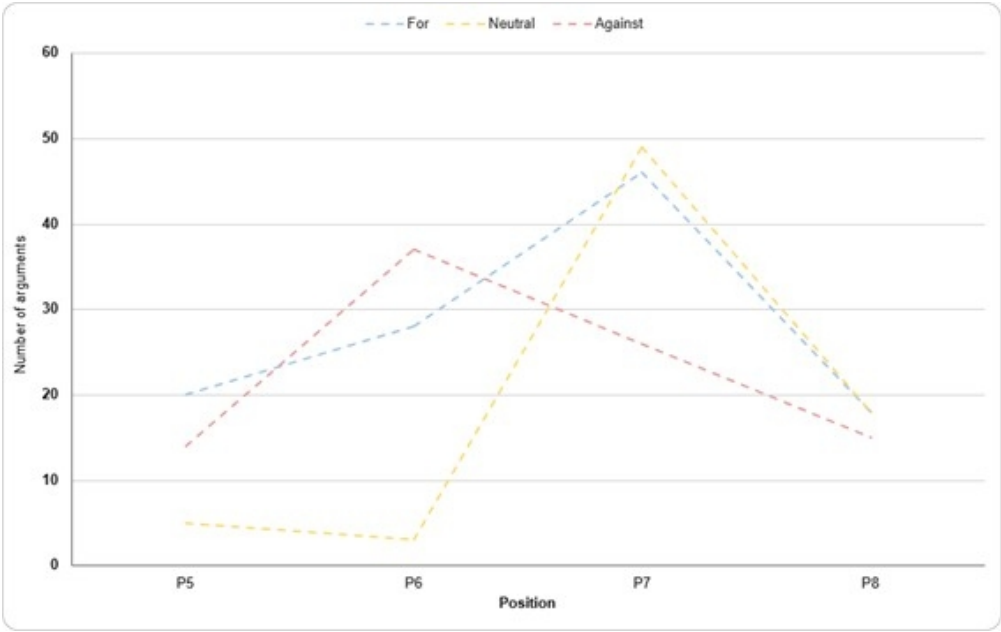


Figure 4. Argumentative positions in decision-making processes on the representation of gender identities in the Wikipedia in Italian (2021-2022). Source: Created by the author

150x94mm (96 x 96 DPI)

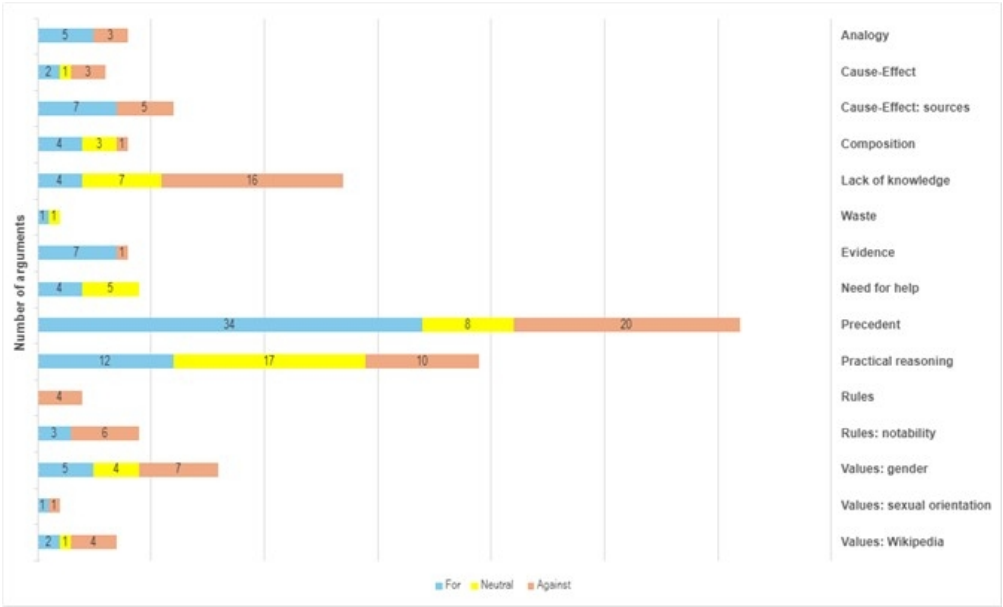


Figure 5. Typology of arguments according to frequency of use in decision-making processes on the representation of gender identities in the Wikipedia in Italian (2021-2022). Source: Created by the authors.

177x107mm (96 x 96 DPI)

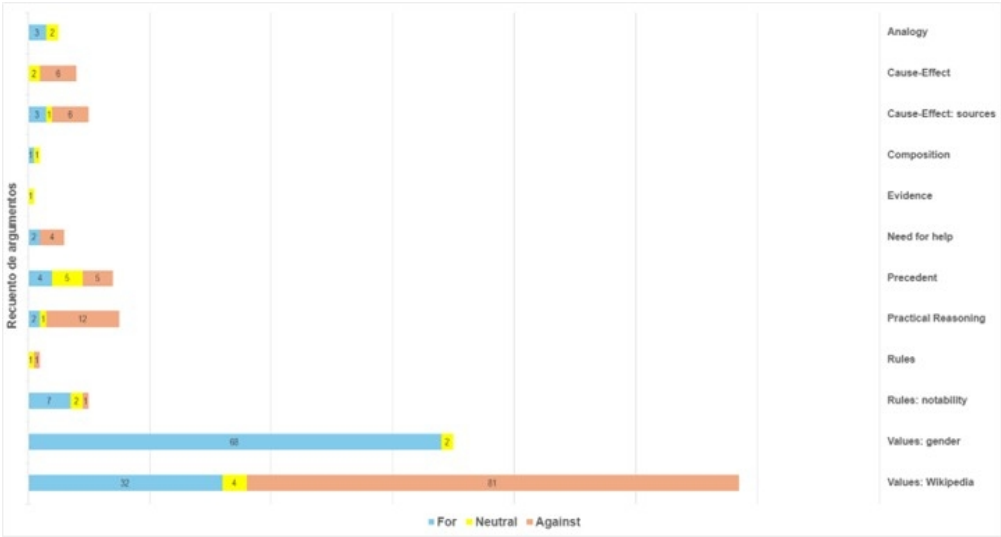


Figure 6. Typology of arguments according to frequency of use in decision-making processes on the inclusion of the dead name in the body of the article in the Wikipedia in French (2024). Source: Created by the authors.

190x101mm (96 x 96 DPI)