Symbolic Capital and Inequality in Scholarly Communication:

A Bibliometric Study of Editorial Boards

Marco Schirone[1,2]

http://orcid.org/0000-0002-4166-153X

[1] Swedish School of Library and Information Science, University of Borås

[2] Department of Communication and Learning in Science, Chalmers University of Technology

Author Note

Correspondence concerning this article should be addressed to Marco Schirone, marco.schirone@hb.se, Swedish School of Library and Information Science, University of Borås, S-501 90, Borås, Sweden

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Abstract

Editorial boards function as gatekeepers in academic publishing, yet systematic frameworks for quantifying how symbolic capital concentrates within editorial networks remain absent. This study operationalizes Bourdieu's symbolic capital theory through network analysis of 2,135 editorial positions across 30 sustainability science journals. Eigenvector centrality measures symbolic capital as prestige derived from connections to other prestigious positions, while Gini coefficients assess distributional inequality. Among 71 interlocking editors (those holding multiple board positions), women comprise only 22.5%, and scholars from Western Europe and North America dominate both numerically and structurally: editors with the highest eigenvector centrality are concentrated almost exclusively in these regions, while Latin America and Africa contribute only two interlocking editors each. A two-dimensional typology combining median eigenvector centrality with Gini coefficients distinguishes four configurations of symbolic capital across journals: concentrated core, dispersed core, concentrated periphery, and dispersed periphery. Critically, journals' positions in editorial interlock networks align only partially with their citation-based intellectual centrality, demonstrating that governance structures and knowledge networks represent distinct dimensions of academic power. This reproducible analytical framework enables systematic comparison of editorial governance structures across fields.

Keywords: Editorial governance, Symbolic capital, Network analysis, Sustainability science, Interlocking editorship

1. Introduction

Editorial boards play a decisive role in scholarly communication: they determine which manuscripts enter the published record, shape disciplinary agendas through special issues, and confer positional authority through appointments, acting as gatekeepers of academic legitimacy (Shaw & Penders, 2018). This gatekeeping function has far-reaching implications for knowledge production, as persistent inequalities in publishing have been documented along lines of gender, geography, and institutional affiliation (Goyanes et al., 2022). Prior research has demonstrated that editorial decisions are subject to systematic biases, with author reputation and network position influencing editorial outcomes (Bravo et al., 2018; Lee et al., 2012).

Despite this evidence of bias and inequality, the structural concentration of symbolic capital within editorial networks remains poorly understood. Symbolic capital—the academic prestige that endows certain actors with greater authority in decision making—accumulates through network positions (Bourdieu, 2004). Yet existing studies do not provide systematic frameworks for quantifying how this gatekeeping power is distributed or concentrated within scientific fields. This study addresses this gap by developing a quantitative framework for measuring symbolic capital in editorial networks, integrating Bourdieu's field theory with network science to advance understanding of the structural mechanisms of academic gatekeeping.

The systematic study of editorial governance has evolved into a research stream in information science, recently termed *editormetrics* and defined as "a quantitatively informed understanding of the editorial rules and roles of journal editors in the research system" (Santos & Mendonça, 2022, p. 7483). Editormetrics research has documented persistent inequalities in editorial representation, including underrepresentation of female editors (Baccini & Barabesi, 2009, 2011) and concentration of editorial positions among scholars from elite institutions in high-income countries (Liu et al., 2023). These patterns deviate from foundational norms of universalism and merit-based evaluation in science (Merton & Storer, 1973).

Moving beyond compositional analyses, scholars have examined editorial interlocks—multiple board positions held by the same individual—as mechanisms that link journals into broader governance networks (Andrikopoulos & Economou, 2015; Baccini & Barabesi, 2011; Santos & Mendonça, 2022). Building on foundational work on interlocking directorates in corporate governance (Burt, 1978), these studies reveal how editorial

interlocks function as both structural concentration mechanisms and prestige signals. Multiple memberships concentrate influence among "an elite within an elite" (Petersen et al., 2017), and editorial networks align with co-authorship and co-citation patterns (Baccini et al., 2020), often reinforcing existing gendered and geographic disparities (Mazov & Gureev, 2016; Mendonça et al., 2018; Santos & Mendonça, 2022).

These findings connect to broader theoretical frameworks for understanding symbolic capital in academia. Following Bourdieu's characterization of citations as the most objectified form of symbolic capital (Bourdieu, 1988, p. 76), Cronin extended this logic to the wider reward system of science, where citations, authorship, and acknowledgments function as objectified markers of prestige (Cronin, 2005). Subsequent research has expanded this perspective, showing how academic reward systems have become increasingly multifaceted, encompassing altmetrics and social media visibility alongside traditional bibliometric indicators (Desrochers et al., 2018). Editorial interlocks complement this literature by highlighting a relational dimension of symbolic capital: authority and legitimacy are embedded not only in texts and citations but also in the governance structures of journals themselves (Baccini et al., 2009).

Understanding how symbolic capital is distributed in editorial networks is not merely a methodological concern but a matter of power and equity in knowledge production. Editorial boards determine not only which manuscripts are published but also which research agendas gain legitimacy, which methodologies are considered rigorous, and which voices are amplified in scholarly discourse (Santos & Mendonça, 2022; Shaw & Penders, 2018). When editorial authority concentrates among scholars from Western Europe and North America, predominantly from elite institutions, and overwhelmingly men, the perspectives that shape entire fields become systematically narrowed (Dada et al., 2022). This concentration raises fundamental questions about epistemic diversity and the inclusivity of scholarly communication, particularly regarding whose knowledge counts, who determines legitimacy, and which communities remain excluded from editorial governance structures.

Despite growing recognition of these inequalities (Liu et al., 2023), existing research has not systematically operationalized Bourdieu's concept of symbolic capital within editorial networks (Bourdieu, 2004). While Bourdieu's theoretical framework has proven productive for bibliometric analyses of citation practices and academic hierarchies (Schirone, 2023a), prior studies of editorial governance have instead relied on proxies—such as citation counts, web visibility, media mentions (Cronin & Shaw, 2002), journal reputation metrics

(Chipidza & Tripp, 2021; Khelfaoui & Gingras, 2020), or authorship patterns (Desrochers et al., 2018).

This study addresses this theoretical and methodological gap by applying eigenvector centrality (EVC) as an explicit operationalization of symbolic capital in editorial networks. EVC captures prestige recursively through the prestige of one's network connections (Bonacich, 1987; Newman, 2006), aligning with Bourdieu's understanding of symbolic capital as fundamentally relational—derived not just from individual achievements but from associations with prestigious positions and institutions (Bourdieu, 2004).

Building on this approach, the study makes three contributions. Theoretically, it bridges Bourdieu's theory of symbolic capital and power in academia (Bourdieu, 1988) with network science (Barabási, 2002; Newman, 2018) and the emerging area of editormetrics (Mendonça et al., 2018; Santos & Mendonça, 2022). Methodologically, it introduces eigenvector centrality as a systematic and transferable measure of symbolic capital concentration across academic fields. Empirically, it applies this framework to sustainability science.

Sustainability science provides a well-suited empirical case for testing this framework (Clark, 2007; Kates et al., 2001). As a relatively young field, it has been framed as a transformative form of inquiry committed to co-creation, inclusivity, and societal engagement; its emphasis on navigating complexity and uncertainty makes it particularly relevant for examining how editorial influence and gatekeeping mechanisms operate in emerging transdisciplinary domains (Ravetz, 2018). At the same time, the field's stated commitment to inclusivity and global perspectives renders patterns of symbolic capital concentration especially significant, as they expose tensions between normative ideals and actual governance practices. To address these dynamics, the study poses two research questions. The first investigates the composition of interlocking editors—scholars who hold positions on multiple boards—while the second examines structural patterns across journals.

RQ1. What is the geographic and institutional composition of editorial positions in sustainability science journals? How is symbolic capital concentrated or dispersed among interlocking editors by gender and geographic region?

RQ2. How do interlocking editors create structural connections among sustainability science journals, and what patterns of inequality emerge in the distribution of symbolic capital across editorial boards?

The remainder of this article is structured as follows. Section 2 details the data collection methodology and network analysis techniques used to examine editorial interlocks among 30 sustainability science journals. Section 3 presents findings on geographic and institutional composition, interlocking editorship patterns, and journal-level governance structures. Section 4 discusses implications for information science theory and sustainability science practice, while Section 5 addresses limitations and future research directions. Section 6 concludes by summarizing the main contributions and their broader significance for understanding editorial governance and symbolic capital in academic fields.

2. Materials and Methods

This study integrates network analysis with inequality measures to examine how symbolic capital is distributed within editorial governance structures. Network analysis identifies relational hierarchies among editors and journals—revealing who occupies central versus peripheral positions—while inequality measures quantify distributional disparities in the accumulation of symbolic capital. This dual approach enables systematic comparison of journals both by their position in interlocking networks and by the internal concentration of prestige among board members. Together, these methods operationalize Bourdieu's theoretical framework within a quantitative analysis of sustainability science as an academic field.

The following sections proceed from conceptual operationalization to empirical application. Section 2.1 establishes how eigenvector centrality operationalizes symbolic capital and how Gini coefficients assess its distribution. Section 2.2 details network construction procedures for editor-editor and journal-journal networks. Section 2.3 addresses visualization strategies and robustness checks that ensure findings are not artifacts of methodological choices. Sections 2.4–2.6 describe data sources, cleaning protocols, and ethical safeguards governing the use of publicly available editorial information.

2.1 Methodology: Symbolic Capital and Inequality Measurement

Symbolic capital, in Bourdieu’s (1991) formulation, exists only through recognition by others—most decisively by those who are themselves recognized. This recursive logic is operationalized through eigenvector centrality (EVC), a network measure that assigns higher

scores to actors connected to other highly scoring actors (Poulin et al., 2000). By capturing prestige through the prestige of one's connections, EVC provides a quantitative operationalization of what Bourdieu described as the "distribution of symbolic capital"—the social importance conferred by those with "the power to recognize, to consecrate, to state, with success, what merits being known and recognized" (Bourdieu, 2000, pp. 241-243).

This operationalization distinguishes symbolic capital from other forms of structural advantage. Degree centrality captures the number of direct ties, betweenness centrality reflects bridging capacity between otherwise disconnected actors, and closeness centrality measures efficiency in reaching others across the network (Yan & Ding, 2009). While each of these metrics identifies important structural positions, none models the recursive dimension that is central to symbolic capital. Eigenvector centrality (EVC), by contrast, uniquely captures recognition by the already recognized, making it especially suited to editorial networks where prestige derives from association with other prestigious positions rather than from sheer connection quantity or brokerage capacity. As Rawlings et al. observe, EVC "rewards those with many ties to those who also have many ties, building on the mutual reinforcement of power among the powerful" (Rawlings et al., 2023, p. 201)

Editorial networks are treated as undirected, reflecting the symmetric nature of co-membership: if editor *A* serves with editor *B* on a board, the relationship is reciprocal. EVC is well-suited to such undirected structures, measuring influence through neighbors' influence without requiring directional assumptions (Newman, 2018, p. 161). EVC is computed on the giant component of the editor-editor network (undirected, weighted by shared boards)—the largest connected subgraph in which all nodes are mutually reachable (Newman, 2018). This restriction ensures comparability of centrality scores across actors while avoiding distortions from isolated components.

Degree, betweenness, and closeness centrality are calculated alongside eigenvector centrality (EVC) for robustness, confirming that each measure captures distinct structural properties. These metrics, however, are not combined with EVC into composite indices. This decision safeguards theoretical clarity in the operationalization of symbolic capital: because Bourdieu's concept functions specifically through recursive recognition rather than through connection quantity (degree), brokerage capacity (betweenness), or reach efficiency (closeness), relying on EVC alone remains the most faithful representation of symbolic capital as a theoretical construct.

While recursive prestige measures have been developed through PageRank and its bibliometric variants (Brin & Page, 1998; Yan et al., 2011), these algorithms introduce assumptions less suited to editorial governance. PageRank incorporates a *random surfer* model that calculates influence as if users randomly navigate from link to link. This assumption fits citation networks, where a reader might follow references in any direction, but it poorly represents editorial interlocks: when two scholars serve on the same board, the relationship is symmetric rather than directional (Yan & Ding, 2011). EVC aligns more directly with both the undirected structure of editorial networks and the Bourdieusian concept of symbolic capital as recursive recognition.

To assess the distribution of symbolic capital, the Gini coefficient is employed—a standard measure of inequality ranging from 0 (perfect equality) to 1 (perfect inequality) (Dorfman, 1979). Widely used in bibliometric research to capture concentration patterns (Nielsen & Andersen, 2021), the Gini coefficient is here applied to eigenvector centrality scores. Building on these applications, Gini coefficients are calculated at two levels to evaluate inequality in the distribution of symbolic capital across editorial networks. At the network level, they summarize how symbolic capital is distributed across all interlocking editors, indicating whether prestige is concentrated among a small elite or broadly distributed. At the board level, they assess internal inequalities within each journal's editorial board. While concerns have been raised about applying Gini coefficients to incomplete networks (Stark et al., 2024), such critiques address large, sparse structures where individuals compare only with local neighbors. Editorial boards constitute bounded groups with complete internal visibility, making this approach methodologically appropriate.

For comparative analysis, board-level Gini coefficients are combined with median EVC scores to construct a two-dimensional typology. This typology, presented in the Results section, classifies editorial boards according to how symbolic capital is distributed within and across them.

2.2 Network Construction

To analyze connections between individual editors, the analytical approach constructs an editor–journal bipartite graph, capturing the affiliations between editors and their respective journals. This bipartite graph is then projected onto an editor–editor network, where connections between editors are established when they serve on the same editorial

board. Edge weights in this network represent the number of shared editorial boards between any two editors, with a minimum threshold of one shared journal applied to retain even weak connections.

For analytical purposes, editors are classified based on their level of involvement across multiple boards. Interlocking editors are defined as those serving on two or more editorial boards, while *super-interlocking* editors are those holding positions on three or more boards. The symbolic capital of individual editors is operationalized through their eigenvector centrality scores within the giant component of the network.

Demographic attributes are coded through multiple verification methods. Gender classification is conducted through manual verification using ORCID profiles (Haak et al., 2012), institutional pages, and academic CVs, supplemented by automated tools including NamSor and GenderAPI (NamSor, 2025; Ozan Soft, 2024). Geographic information is derived from editors' institutional affiliations and categorized by country, continent, and subregion following the United Nations M49 classification system (United Nations Statistics Division, 2025).

The bipartite editor–journal graph is projected into a journal–journal co-editorship network, where journals are connected when they share editors and edge weights represent the number of shared editors. This projection highlights overlaps in editorial governance, which may correspond to thematic alignments within the field.

Journal-level symbolic capital is operationalized as the median eigenvector centrality of a journal's editorial board members. Individual editor centrality scores are first calculated within the editor network and then aggregated to the journal level using the median. The median is preferred over the mean because it provides a more robust indicator of typical editorial prestige, reducing sensitivity to extreme outliers.

Community structure is detected in both the editor and journal networks using the Leiden algorithm (Traag et al., 2019). Primary results are reported at a resolution parameter of 0.2, with robustness checks across values from 0.1 to 2.0 confirming the stability of the detected clusters. This approach systematically identifies clusters of journals with overlapping editorial governance, which can then be interpreted as thematic alignments within sustainability science.

2.3 Network Visualization, Reproducibility and Robustness

For visualization purposes, both the editor–editor and journal–journal networks are displayed using the Fruchterman–Reingold layout algorithm (Fruchterman & Reingold, 1991). This algorithm positions nodes in two-dimensional space such that strongly connected nodes are placed closer together, while weakly connected or unconnected nodes are pushed farther apart. To ensure reproducibility and comparability across visualizations, a fixed random seed is applied so that the spatial arrangement of nodes remains consistent across different plots (McNulty, 2022).

In the editor networks, node color indicates the median eigenvector centrality, node size reflects degree strength (number of co-editorship ties), and node shape distinguishes categorical attributes such as gender or geographic subregion. In the journal network, node size reflects the number of affiliated editors, node color represents the median eigenvector centrality, and edge thickness indicates the number of shared editors between journals. These design choices highlight both the structural relations within each network and the distribution of symbolic capital across individual and institutional positions.

All statistical analyses and network modeling are conducted in *R* (version 4.5.0) (R Core Team, 2025). Key *R* packages include igraph for network analysis, ggraph for visualization, and ineq for inequality measures (Csardi & Nepusz, 2006; Pedersen, 2025; Zeileis, 2014). Random seeds are fixed for the Fruchterman–Reingold layout and Leiden community detection to guarantee deterministic outputs. Analytical parameters—including thresholds for shared journal memberships, resolution settings for community detection, and random seeds—are externalized in a configuration file. This design ensures that the workflow can be rerun with identical results or adapted to other contexts through parameter modification.

In line with best practices in social network analysis and editormetric research (Wasserman, 1994; Wu et al., 2020), robustness checks indicate that findings are not driven by specific modeling assumptions. Results are compared across four centrality measures: eigenvector, degree, betweenness, and closeness. Community detection is repeated across a resolution parameter sweep (0.1–2.0). Editorial networks are reconstructed under varying interlock thresholds, from at least one to at least five shared journals. Metrics are also calculated on both the full network and the giant component, producing virtually identical

rankings (Spearman's rank-order correlation, $\rho = 0.997$, $n = 69$, $p = 8.2 \times 10^{-76}$). Nonparametric bootstrap resampling provides 95% confidence intervals (CIs) for field-level median eigenvector centrality (95% CI [0.106, 0.358]) and Gini coefficients (95% CI [0.411, 0.539]), confirming their stability. The complete analytical framework, including code and extended results, is available in the GitHub repository of the article (see the Data Availability Statement). This paper reports the principal findings, with additional analyses and robustness checks documented in the repository.

2.4 Data Sources

This study examines editorial board membership across thirty sustainability science journals to assess editorial influence and interlocking editorships. The selection process followed a structured approach to ensure breadth, depth, and representativeness.

First, eighteen journals were selected based on a previous study that identified leading titles in sustainability science (Schirone, 2023b). Three historically significant journals were also included because of their foundational contributions to the field: *Environment, Development and Sustainability* and the *International Journal of Sustainable Development & World Ecology* were added for their longstanding impact, while *Sustainable Development* was already part of the original subset, reinforcing its relevance.

To further enhance coverage, ten additional journals were selected from a curated list compiled by Harley and Clark (2020), developed as a complement to their literature review and synthesis (Clark & Harley, 2020). From this list, *Research Policy* was excluded because of its broad scope, which results in many articles falling outside the focus of this study. For *Proceedings of the National Academy of Sciences of the United States of America* (PNAS), only editors responsible for the "Sustainability Science" section were included.

This combination of leading titles, historically significant publications, and an expert-vetted list ensured that the dataset captured the intellectual breadth, historical depth, and structural diversity necessary for bibliometric and network analysis. The full list of included journals is provided in Table 1.

Table 1

Journals whose editorial boards were analyzed in the study

No.	Journal Name
1	*ACS Sustainable Chemistry and Engineering*
2	*Agronomy for Sustainable Development*
3	*Annual Review of Environment and Resources*
4	*ChemSusChem*
5	*Current Opinion in Environmental Sustainability*
6	*Earth System Governance*
7	*Ecological Economics*
8	*Ecology and Society*
9	*Environment, Development and Sustainability*
10	*Environmental Innovation and Societal Transitions*
11	*Environmental Research Letters*
12	*Global Environmental Change*
13	*Green Chemistry*
14	*IEEE Transactions on Sustainable Energy*
15	*International Journal of Precision Engineering and Manufacturing-Green Technology*
16	*International Journal of Sustainability in Higher Education*
17	*International Journal of Sustainable Development & World Ecology*
18	*Journal of Cleaner Production*
19	*Journal of Industrial Ecology*
20	*Journal of Sustainable Tourism*
21	*Nature Sustainability*
22	*Proceedings of the National Academy of Sciences of the United States of America*
23	*Renewable and Sustainable Energy Reviews*
24	*Renewable Energy*
25	*Sustainability Science*
26	*Sustainable Cities and Society*
27	*Sustainable Development*
28	*Sustainable Materials and Technologies*
29	*Sustainable Production and Consumption*
30	*World Development*

Note. Proceedings of the National Academy of Sciences of the United States of America includes only editors of the "Sustainability Science" section

Following Baccini and Barabesi (2011), who noted variability in editorial role titles across journals, the analysis focused on functional responsibilities rather than formal titles.

Editorial board members no longer involved in decision-making, or whose roles were primarily logistical or journalistic, were excluded. Advisory boards focused mainly on peer review quality control were excluded. This determination was based on publicly available role descriptions on journal websites at the time of data collection. For example, the advisory panel of *Environmental Research Letters* was excluded because its stated role centered on supporting peer review and maintaining review quality rather than editorial governance. This process resulted in a dataset of 2,135 editorial positions across the 30 journals. Within this set, 71 interlocking editors were identified—unique individuals holding positions on more than one editorial board—forming the basis for additional analysis of gender and geographic aspects.

2.5 Data Cleaning

Data were collected between January 6 and January 12, 2025, from publicly available editorial board information on journals' official websites. Because website designs and the availability of standardized data vary considerably, a hybrid collection strategy was employed. While initiatives such as *Open Editors* (Nishikawa-Pacher et al., 2023) provide structured editorial board data for some journals, their incomplete coverage and inconsistent formats for the journals analyzed required a custom approach. Whenever feasible, automated web scraping with the *R* package rvest was used to systematically retrieve editorial roles, names, and affiliations (Wickham, 2025a). Extracted data were cleaned and reviewed for accuracy. For most journals, however, webpage formats prevented automated collection; in these cases, data were gathered manually and verified against institutional websites for editorial roles, names, and affiliations.

To ensure consistency, editor names and institutional affiliations were standardized through a hybrid approach combining manual verification with automated processing. Custom *R* scripts performed text normalization, duplicate detection, and string matching (R Core Team, 2025; Wickham, 2025b).

2.6 Ethical Considerations

This study relies exclusively on publicly available information about editorial board membership, including names, institutional affiliations, and professional roles. Data were collected from journal websites, ORCID profiles, and academic CVs, in line with established practices for bibliometric data collection (Lindelöw et al., 2025).

To safeguard privacy while ensuring transparency, findings are presented only at the aggregate or structural level through network representations, and no individual editor is identifiable in the results. This reliance on anonymized structural data is consistent with ethical standards for research using public information (Schaefer, 2024). Therefore, the GitHub repository associated with this article provides a sample dataset rather than the full dataset of identified editors (see the Data Availability Statement). Finally, gender was analyzed within a binary classification framework due to limitations in available data and current tools. This approach does not capture non-binary or gender-diverse identities, and findings should therefore be interpreted with this limitation in mind.

3. Results

3.1 RQ1: Geographic and Institutional Composition (All Editorial Board Positions)

Editorial board positions in sustainability science exhibit marked geographic concentration rather than global distribution. The United States demonstrates the highest editorial representation (n = 372), followed by China (n = 246), the United Kingdom (n = 184), Australia (n = 109), Italy (n = 96), and Germany (n = 84). This concentration across Europe, North America, and East Asia results in substantial underrepresentation from the Global South, challenging sustainability science's commitment to global inclusivity (Schirone, 2025). An interactive world map showing the global distribution of editorial positions by country is included in the Supplementary Material.

Editorial positions exhibit pronounced institutional concentration among elite research universities. The University of California leads with 26 appointments, followed by Stockholm University (n = 22) and the Chinese Academy of Sciences (n = 19). The University of Tokyo and Arizona State University each hold 18 editorial positions. This concentration establishes these institutions as central nodes in sustainability science's editorial infrastructure, with five institutions accounting for 109 of the 2,135 total editorial positions (5.1%).

3.2 RQ1: Interlocking Editorship and Editorial Power Structures

The analysis identifies a small yet highly influential subset of scholars who serve on multiple journals. Among the 2,135 editorial positions analyzed, 71 scholars (3.33%) held multiple editorial positions, corresponding to 150 instances of interlocking editorship (7.03% of all editorial positions). While most editors (96.67%) are affiliated with only a single

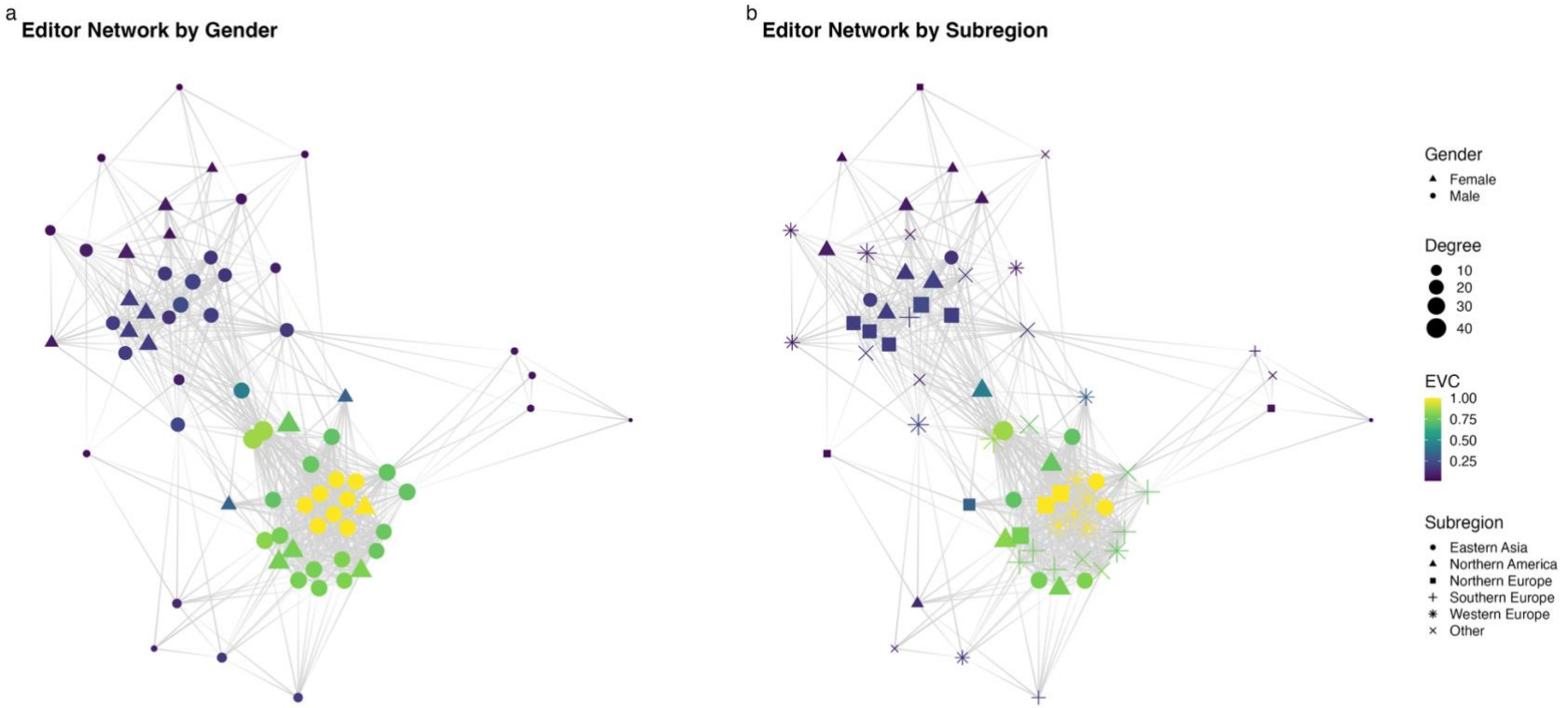
journal, 2.95% hold positions on two editorial boards, and 0.37% serve as "super-interlocking editors," holding roles on three or more boards. The observed interlocking density for sustainability science falls between that reported in prior studies of other disciplines: 2.3% in economics and 8.7% in information and library sciences (Baccini & Barabesi, 2009, 2011).

Gender disparities underscore the uneven distribution of editorial influence: among the 71 interlocking editors, 16 (22.5%) are women. This underrepresentation is even more pronounced at the highest leadership levels: the three individuals who are simultaneously interlocking editors and Editors-in-Chief are all men. In the network core (Figure 1a), represented by nodes with the highest eigenvector centrality scores, the majority of editors are also men.

Subregional analysis reveals the extent of geographic concentration among interlocking editors (Figure 1b). Within the giant component of 69 interlocking editors, four regions account for a majority: Western Europe (n = 14, 20%), Northern America (n = 13, 19%), Northern Europe (n = 12, 17%), and Eastern Asia (n = 10, 14%). The remaining editors are distributed across Southern Europe (n = 8), with minimal representation from Australia and New Zealand (n = 2), Western Asia (n = 2), South-eastern Asia (n = 2), Western Africa (n = 2), Southern Asia (n = 1), Central America (n = 1), South America (n = 1), and Eastern Europe (n = 1). This distribution demonstrates stark regional inequalities: Latin America contributes only two editors across Central and South America, while Africa is represented by just two editors from Western Africa. Most significantly, the editors with the highest eigenvector centrality scores—those holding the most prestigious positions in the network core (Figure 1b)—are concentrated in Western and Northern Europe (especially the Netherlands, Germany, and the United Kingdom) and Eastern Asia (particularly China).

Figure 1

Network of editors based on shared journals. (a) Gender. (b) Geographic region.



Note. Node color indicates symbolic capital (eigenvector centrality); node size represents degree strength (number of co-editorship ties). Node shape corresponds to (a) gender and (b) UN M49 subregion. Layout = Fruchterman–Reingold.

3.3 RQ2: Journal–Journal Network (Communities)

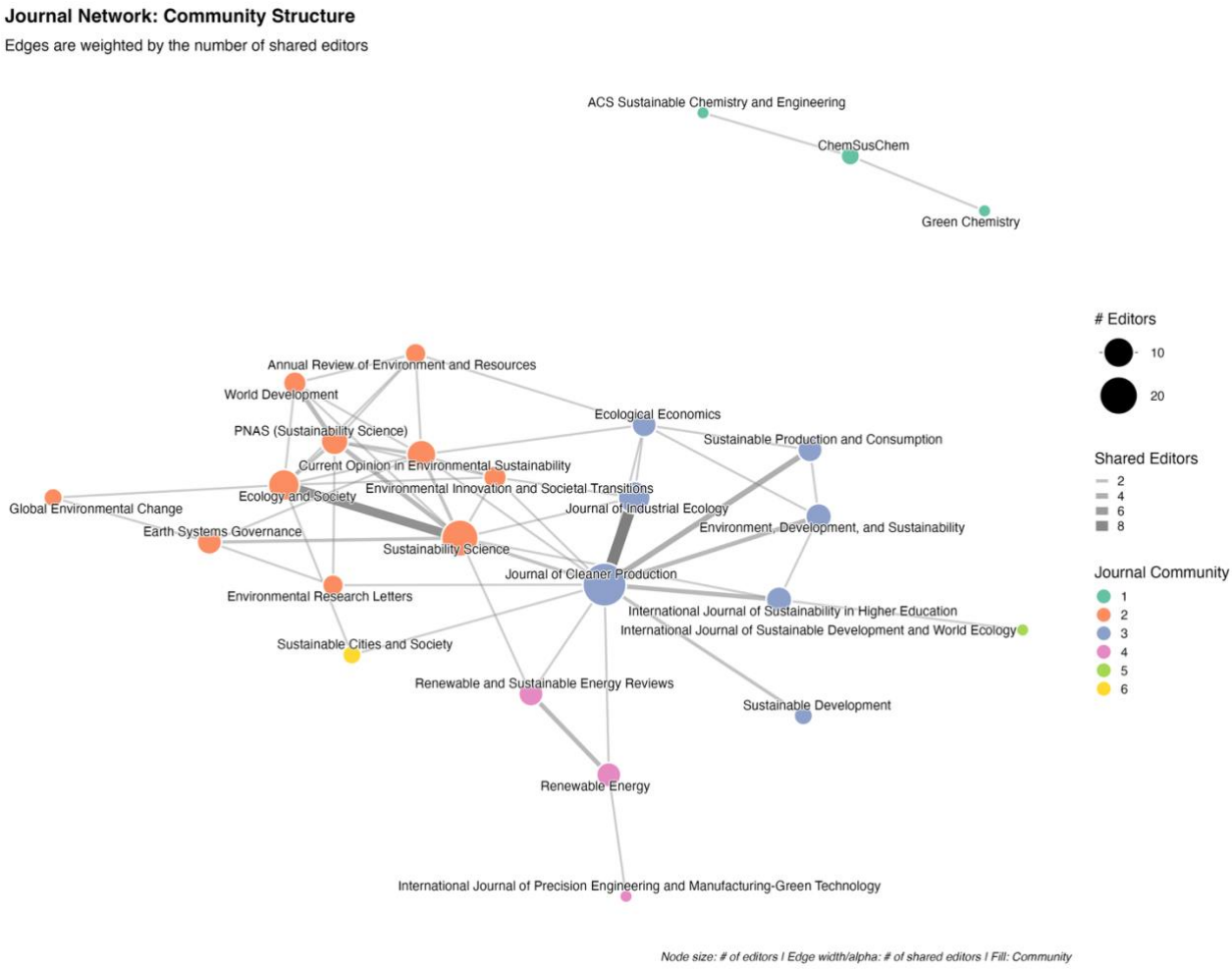
Figure 2 illustrates the journal co-membership network, showing that editorial governance in sustainability science is not fully decentralized but instead organized into distinct, interconnected communities. Two major clusters dominate the field. The first, centered on *Journal of Cleaner Production*, *Journal of Industrial Ecology*, *Ecological Economics*, and *Sustainable Production and Consumption*, reflects a community oriented toward industrial ecology, circular economy, and environmental economics. This cluster also incorporates *Environment, Development, and Sustainability* and *International Journal of Sustainability in Higher Education*, linking applied sustainability and educational domains to production-oriented research.

The second major cluster includes *Sustainability Science*, *Ecology and Society*, *PNAS* (Sustainability Science section), *Annual Review of Environment and Resources*, and *World Development*. This group reflects the influence of socio-ecological systems research, resilience science, and environmental governance. Journals such as *Current Opinion in Environmental Sustainability*, *Environmental Research Letters*, and *Earth System Governance* also align with this cluster, indicating points of convergence between resilience-oriented scholarship and governance perspectives.

Beyond these two dominant blocs, several smaller communities are visible. One links *Renewable Energy* and *Renewable and Sustainable Energy Reviews*, oriented toward energy transitions. Another brings together chemistry-focused journals, including *Green Chemistry*, *ChemSusChem*, and *ACS Sustainable Chemistry and Engineering*, which remain more peripheral and less integrated into interdisciplinary sustainability science. Finally, *Sustainable Cities and Society* and *International Journal of Sustainable Development & World Ecology* appear as distinct single-journal clusters, reflecting more specialized editorial niches.

Figure 2

Network of journals based on shared editors.



Note. Edges are weighted by the number of shared editors. Node size represents the number of affiliated editors; node color indicates community membership as detected by the Leiden algorithm (resolution = 0.2). Layout = Fruchterman–Reingold.

3.4 Board-Level Inequality and Journal Typology

Journal-level measures shed light on how symbolic capital is organized within editorial communities. Median eigenvector centrality (EVC) captures the typical level of symbolic capital held by a board's members, while the Gini coefficient reflects the degree of inequality in its distribution. Together, these measures indicate not only which journals

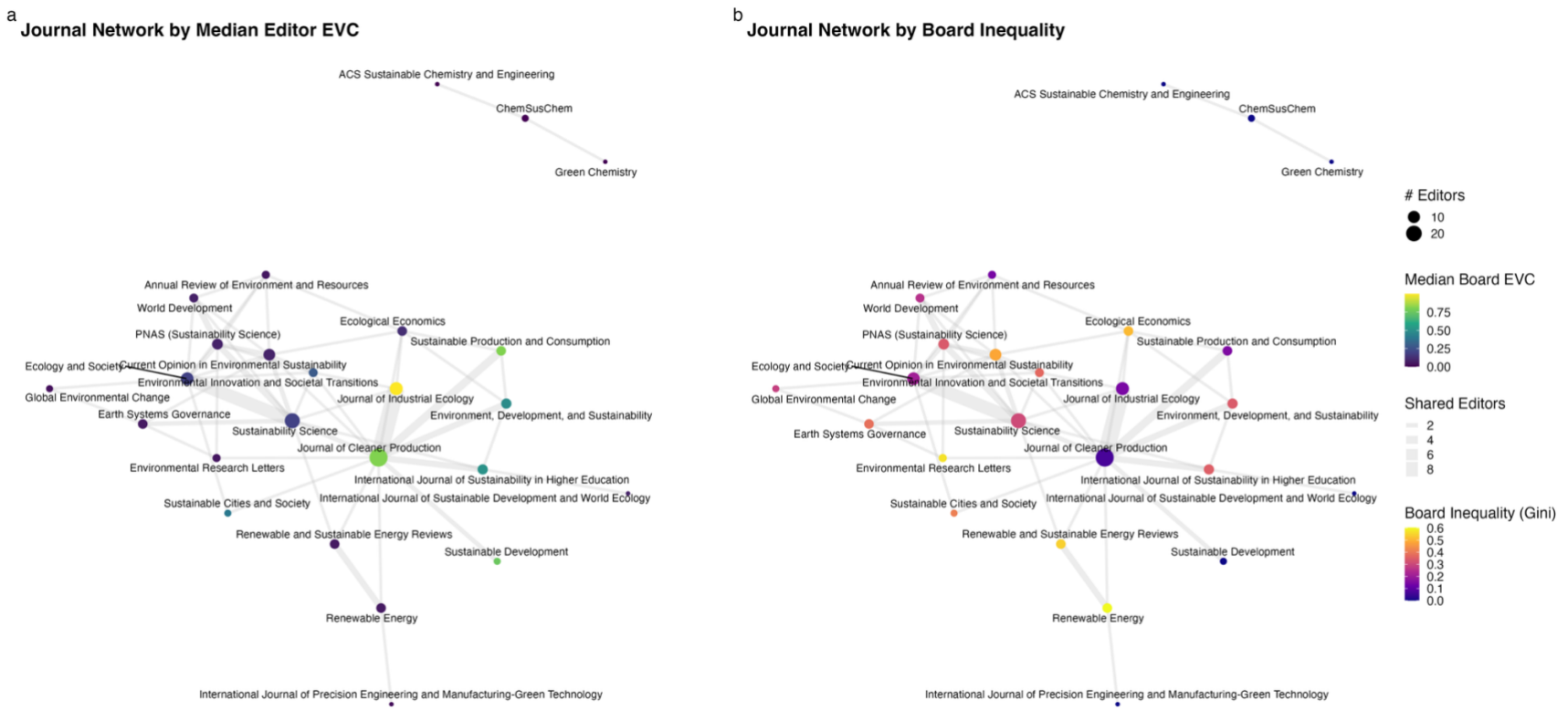
occupy central positions in the interlocking editorial field but also how symbolic capital is distributed internally.

Figure 3a displays symbolic capital across journals, measured by median EVC. Leading sustainability publications such as *Journal of Cleaner Production*, *Sustainability Science*, and *Ecology and Society* show relatively high symbolic capital, positioning them close to the intellectual core (Clark & Harley, 2020; Schirone, 2023b). Figure 3b complements this view by visualizing inequality through the Gini coefficient.

These measures reveal important contrasts. *Ecological Economics*, *International Journal of Sustainability in Higher Education*, *Environment, Development and Sustainability*, and *Environmental Innovation and Societal Transitions* combine relatively high symbolic capital concentrated in fewer editors. By contrast, *Journal of Cleaner Production*, *Journal of Industrial Ecology*, *Sustainable Production and Consumption*, *Sustainability Science*, and *Ecology and Society* hold comparable symbolic capital yet maintain flatter structures of editorial interlocks. Similar differences emerge among less central journals: *World Development* and *PNAS* distribute influence relatively evenly, whereas *Environmental Research Letters*, *Renewable and Sustainable Energy Reviews*, *Renewable Energy*, and *Earth System Governance* rely heavily on one or two central figures. For very small boards ($n \leq 3$), Gini values are not substantively meaningful and should be interpreted with caution.

Figure 3

Symbolic capital and inequality across journals. (a) Median symbolic capital. (b) Within-board inequality.



Note. Panel (a) shows the median eigenvector centrality of editors, representing the concentration of symbolic capital at the journal level. Panel (b) shows the Gini coefficient of within-board eigenvector centrality, indicating inequality in the distribution of symbolic capital among editors. Gini values for boards with $n \leq 3$ should be interpreted with caution.

These findings reveal that symbolic capital concentration alone fails to characterize editorial authority; internal distribution within each editorial board is equally important. To analyze both dimensions systematically, median EVC and Gini coefficients were integrated into a two-dimensional typology (Table 2) that distinguishes four structural configurations of editorial governance:

- **Dispersed Core** (e.g., *Journal of Cleaner Production*, *Journal of Industrial Ecology*, *Sustainable Production and Consumption*, *Sustainability Science*, *Ecology and Society*): central journals with high symbolic capital that is broadly distributed among editors.

- **Concentrated Core** (e.g., *Ecological Economics*, *International Journal of Sustainability in Higher Education*, *Environment, Development and Sustainability*, *Environmental Innovation and Societal Transitions*): central journals with high symbolic capital concentrated among a small subset of editors.

- **Dispersed Periphery** (e.g., *World Development*, *PNAS*): peripheral journals with low symbolic capital broadly distributed among editors.

- **Concentrated Periphery** (e.g., *Environmental Research Letters*, *Renewable and Sustainable Energy Reviews*, *Renewable Energy*, *Earth System Governance*): peripheral journals with low symbolic capital concentrated among a small subset of editors.

This typology provides a systematic basis for comparing editorial governance across journals, showing that governance is shaped by both network position and the internal distribution of prestige. Notably, journals with similar centrality scores can differ substantially in how they concentrate or distribute editorial influence.

Table 2

Typology of Editorial Boards

Symbolic capital (Median eigenvector centrality)	**Inequality of symbolic capital** (Gini): **Low**	**Inequality of symbolic capital** (Gini): **High**
High	**Dispersed Core**: High symbolic capital; broadly shared among editors.	**Concentrated Core**: High symbolic capital; concentrated in a few editors.
Low	**Dispersed Periphery**: Low symbolic capital; shared collectively.	**Concentrated Periphery**: Low symbolic capital; reliant on one or two editors.

Note. Median eigenvector centrality indicates the typical level of symbolic capital within a board; the Gini coefficient captures inequality in its distribution.

4. Discussion

Editorial interlocks represent an underexplored mechanism through which symbolic capital operates in academic fields. This study extends existing knowledge about how scholarly authority becomes institutionalized and reproduced through editorial governance. Previous bibliometric research has documented editorial networks and their structural properties (Baccini & Barabesi, 2009, 2011; Santos & Mendonça, 2022), while other work has examined how prestige accumulates through citations, authorship patterns, and acknowledgments (Cronin, 2005), with recent studies expanding this view to include altmetrics and social media visibility (Desrochers et al., 2018). Yet this body of work has primarily focused on textual traces of academic achievement. This study shifts attention from these textual forms to governance-based prestige embedded within editorial networks.

Editorial positions create persistent networks that generate and distribute recognition through prestige by association. While citations accumulate recursively through the Matthew

effect (Merton, 1968)—where highly cited papers attract more citations—this process remains transactional, with each citation adding incrementally to visibility. Collaborative authorship similarly operates through discrete contributions that build reputation over time. Editorial governance, by contrast, produces recursive accumulation through the network positions that editors occupy in board networks. Each appointment derives value from both its individual prestige and its connections to other prestigious appointments, creating a structural multiplier effect (Bourdieu, 1988). This positional recursion represents the process of "consecration" (Bourdieu, 2000, p. 240): editorial constellations anchored in journals, institutions, and individuals already recognized as prestigious amplify recognition through networked prestige rather than individual achievement alone. Each editorial appointment gains value not only from its formal title but from its association with already-consecrated positions. Eigenvector centrality provides a methodological innovation for capturing this process, moving beyond simple counts of positions to reveal how network location structures differential access to recognition.

This recursive accumulation helps explain the disproportionate concentration of editorial symbolic capital among scholars on Western-dominated and male-dominated editorial boards. Access to these prestigious networks amplifies existing advantages, ensuring that those embedded in such boards continue to accumulate symbolic capital, while scholars from the Global South and underrepresented gender groups face structural barriers to comparable recognition. These dynamics reinforce broader inequities in academic governance and narrow the epistemic diversity of perspectives that shape research agendas.

Editorial networks exhibit unique characteristics compared to other forms of academic organization (Ni et al., 2013). While bibliometric methods like P-Rank have been developed to integrate papers, authors, and journals into unified prestige indicators across heterogeneous scholarly networks (Yan et al., 2011), research shows that interlocking editorship, co-authorship networks, and co-citation patterns overlap only partially, with editorial networks displaying the weakest correlations to the other two (Baccini et al., 2020). This indicates that editorial prominence follows different logics than intellectual prominence. Findings from library and information science Ni et al. (2013) and subsequent work across economics and statistics Baccini et al. (2020) confirms this pattern of partial independence between editorial governance and intellectual networks. Two distinct dimensions can thus be analytically distinguished. *Intellectual prominence* reflects how central a journal is within its knowledge domain, historically measured through citations and co-citation patterns (Garfield,

1972; Small, 1973). *Editorial prominence*, by contrast, captures a journal's position within interlocking governance networks.

Sustainability science illustrates this divergence (**RQ2**). Co-citation analysis identifies *ACS Sustainable Chemistry & Engineering* as a crucial bridge to chemistry communities and confirms the *Journal of Cleaner Production* as a central hub (Schirone, 2023b). Editorial interlock analysis, however, reveals a contrasting pattern: journals oriented toward chemistry remain marginal within governance networks, and *PNAS* (Sustainability Science section) occupies a weakly connected position despite its global recognition (Milojević, 2020). These findings demonstrate that *intellectual prominence* and *editorial prominence* constitute distinct dimensions of symbolic capital—a journal may be frequently cited yet lack well-connected editors in the wider governance network.

The concentration of editorial prominence reflects geographic and institutional biases that extend beyond citation-based measures of intellectual prominence, revealing how recognition operates through social mechanisms beyond the knowledge dynamics of the field. These results provide a direct answer to **RQ1**, showing that editorial prominence is systematically concentrated along geographic, institutional, and gendered lines.

Board appointments may appear to represent merit-based recognition of scholarly achievement, yet they perform a more complex function: transforming different forms of capital into symbolic capital. Scientific capital (publications, citations, intellectual recognition) and social capital (professional networks, institutional affiliations) do not automatically confer authority; they gain force only when recognized according to the rules of the academic field (Bourdieu, 2004). Through processes of institutional consecration and peer recognition, these forms of capital are transformed into symbolic authority, granting scholars legitimacy and influence derived from both individual achievements and institutional position within network structures.

Editorial power operates, therefore, through consecration: authority stems from occupying positions within *consecrated networks* of already prestigious journals, institutions, and individuals. Editorial board membership thus becomes a conversion mechanism, transforming scholarly credentials into capital that carries institutional weight and enabling further accumulation through prestige by association and network effects.

These patterns reveal how structural inequalities become institutionalized in editorial governance. Western institutions dominate interlocking positions, women remain substantially underrepresented, and super-interlocking editors concentrate disproportionate influence within small elite circles. Editorial networks simultaneously reflect existing

academic hierarchies and actively constrain epistemic diversity by limiting which voices shape disciplinary norms and research agendas. Standard academic procedures—journal prestige rankings, citation-based reputation systems, and network-based recruitment—inadvertently reinforce these geographic and institutional concentrations of authority, creating self-perpetuating cycles of exclusion.

These dynamics raise fundamental concerns about knowledge production (Collyer, 2016; Nielsen & Andersen, 2021). The concentration of editorial prominence determines who shapes research agendas and which knowledge claims gain legitimacy within academic fields. In sustainability science, these dynamics carry special weight. The field explicitly commits to integrating diverse knowledge systems and addressing global challenges (Lang et al., 2012; Wearne & Riedy, 2024). Yet editorial networks dominated by men from Western institutions systematically exclude crucial perspectives, including contributions from the Global South, Indigenous knowledge traditions, and local environmental practices (Chambers et al., 2021; Norström et al., 2020). These imbalances conflict with recent discussions of sustainability science as a form of post-normal science, given post-normal science's emphasis on *extended peer communities*—the inclusion of stakeholders, practitioners, and local or Indigenous groups as legitimate knowledge co-producers in contexts of uncertainty and contested values (Ravetz, 1999, 2018). Importantly, these underrepresentation patterns are not confined to sustainability science but also emerge in the environmental sciences (Dada et al., 2022; Lobo-Moreira et al., 2023) and other disciplines (Larivière et al., 2013; Liu et al., 2023).

The typology of Concentrated and Dispersed Core and Periphery journals reveals additional complexity. Journals with comparable levels of editorial prominence can nevertheless exhibit markedly different internal distributions of authority. These differences reflect cumulative appointment practices, disciplinary traditions, and institutional hierarchies, rather than deliberate editorial strategies. Editorial prominence, therefore, operates through two partially independent mechanisms: a journal's position within the interlocking network and the internal organization of its board. Recognizing this dual mechanism challenges single-dimensional models of editorial governance.

5. Limitations and Future Directions

Several limitations should be acknowledged. The analysis covers 30 journals, offering broad but not exhaustive coverage—particularly of regional journals, which may exhibit different editorial dynamics. Moreover, the study offers a cross-sectional snapshot; a longitudinal design could capture temporal shifts in editorial board composition and assess whether editorial power is becoming more inclusive.

The gender analysis was limited to a binary framework due to constraints in available data and current classification tools, and does not capture non-binary or gender-diverse identities. Future research incorporating more nuanced gender classifications would provide a more complete understanding of diversity patterns in editorial governance.

Methodologically, network analysis does not establish causality (Peel et al., 2022). Future research could complement these quantitative approaches with qualitative methods—such as interviews with editors—to better understand how editorial boards shape field organization and intersect with peer review models and journal impact strategies.

The challenges in data collection and name disambiguation mentioned in Section 2.2 highlight the need for greater standardization in scholarly publishing. Implementing standardized practices—such as mandating ORCID integration for editorial board members—would enable more reliable analyses of editorial hierarchies and knowledge governance. Further development of openly accessible editormetric tools would contribute to Open Science goals and enable more systematic monitoring of representation patterns in editorial governance (Leonelli, 2023).

Despite focusing on sustainability science, the methodological framework remains transferable to other fields with established editorial board systems and meaningful interlock patterns. However, future research needs field-specific adaptations where editorial governance structures differ significantly from those observed here.

6. Conclusions

This study establishes editorial interlocks as a distinct form of symbolic capital institutionalized within the governance structures of academic publishing. By operationalizing Bourdieu's concept of symbolic capital through eigenvector centrality and inequality measures (Bourdieu, 1991), it extends existing bibliometric accounts of symbolic capital in academia (Cronin, 2005; Desrochers et al., 2018) to include the prestige of journals' gatekeepers (Ni et al., 2013). In doing so, it advances editormetrics as an emerging domain within bibliometrics and information science by providing systematic, reproducible

tools for analyzing how symbolic capital and inequality are structured in editorial governance.

Empirically, the analysis of sustainability science journals reveals pronounced concentrations of editorial prestige. Board positions are disproportionately occupied by scholars based in Western Europe and North America, affiliated with a handful of elite universities, and overwhelmingly men: women represent only 22.5% of interlocking editors and hold none of the editor-in-chief roles in this group. Most significantly, editors with the highest symbolic capital—those occupying the most prestigious network positions as measured by eigenvector centrality—are located almost exclusively in Western and Northern Europe (especially the Netherlands, Germany, and the United Kingdom) and Eastern Asia (particularly China). Latin America and Africa are nearly absent from interlocking positions, with only two editors each. This geographic monopoly of the most prestigious network positions fundamentally challenges sustainability science's stated commitments to global inclusivity and diverse knowledge systems, revealing persistent tensions between normative ideals and actual governance practices.

The findings highlight the broader implications of editorial governance for equity and epistemic diversity in scholarly communication. Concentrations of authority among a small elite risk narrowing the perspectives that shape research agendas, while more dispersed configurations suggest possibilities for more inclusive governance. By making symbolic capital in editorial networks both visible and measurable, this framework enables critical reflection on how authority is organized, reproduced, and potentially rebalanced across academic fields. Future work might build on this foundation by exploring how alternative models of editorial organization could mitigate structural inequalities and foster more diverse forms of scholarly governance.

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Data Availability Statement

The data underlying this study were collected from publicly available sources (journal websites, ORCID profiles, and institutional pages). Due to research ethical considerations and to avoid the identification of individual editors, the complete dataset cannot be shared. The associated GitHub repository (https://github.com/marcoschirone/editorial-board-network-analysis), archived at Zenodo (https://doi.org/10.5281/zenodo.17348636), provides a sample dataset, the full reproducible workflow (R scripts, configuration files, and visualization code), and the outputs of the analysis (tables, figures, summary statistics, and robustness checks).

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