ALGORITHMIC MEDIATION IN OPEN ACCESS JOURNALS: PLATFORMS, VISIBILITY AND EPISTEMIC CHALLENGES[1]

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Introduction

In this proposal, we argue that the ability to filter and recommend articles on the web is linked to contemporary forms of capitalism, data colonialism, and techno-colonialism (Madianou, 2019). In this context, scientific production experiences a paradox of mediation: the illusion of an absence of mediation, where media disappear to offer a direct connection to research objects, and a process of hypermediation (Furtado, 2003), in which almost all knowledge circulates through Big Tech infrastructures. In this scenario, academic and non-academic users are not always aware that they are in the mediating presence of a platform such as Google to access research results.

The minimalist design of search engines carries with it all the complex correlations of the political and economic machinery, demonstrating that search results are not just the product of readers' desires, but of complex struggles between states and corporations (Ochigame, 2021). In an environment of information disorder (Wardle and Derakhshan, 2017) and intense datafication (Van Dijck, 2014), academic and non-academic audiences, such as journalists, find themselves mobilized to use search platforms as shortcuts, so that the choice of words in an article's title can influence reader behavior. This aspect is signaled by our study, which discusses the challenges of the socio technical mediation of platforms such as Google in the information flows of Brazilian open access journals, whose evaluation parameters have been updated since the consolidation of the h index (D'almonte et al., 2024).

Our hypothesis is based on the assumption that the visibility of scientific production is mediated by algorithmic logics that are often overlooked by the scientific community, which does not always consider algorithms as part of its science-in-action processes (Latour, 2011). Therefore, if we want to build epistemic sovereignty (Oliveira and Pinto, 2024) and digital sovereignty (Barbosa, Herlo, Joost, 2024; Lemos, Espíndola and Tosatti, 2024; Grohmann and Barbosa, 2025), there is an urgent need for regulation (D'Almonte and Santos, 2024) that specifically addresses the unequal relationship between journal websites and search platforms.

Methods and discussion

We analyzed the online traffic metrics of an Open Access journal in the field of Communication and Information, co-edited by two Brazilian universities. The data were collected using Google Analytics 4 and the traffic management tool provided by the content management system (CMS) installed on the journal's website. The CMS counts downloads of PDF articles in each issue of the journal and converts this information into graphs. Six parameters were analyzed: (1) user acquisition, (2) traffic acquisition, (3) traffic origin, (4) pages and screens accessed, (5) organic searches, and (6) PDF downloads.

This collection allowed us to quantify visits, understand the process of circulation and content mediation, learn about reading interests, and map important terms for the journal's performance on search results. Despite the quantitative nature of the data collection from audience monitoring tools, our analysis is qualitative and has allowed us to establish the nature of phenomena (Silverman, 2009), such as the correlation between visibility patterns of articles and search trends for specific terms or themes. Notably, an access spike to an article analyzing the xVideos pornographic platform suggested an anomaly that indicates that themes such as pornography may influence journal website performance in search results.

Acting in a more or less opaque way (Rossetti and Angeluci, 2021), search engines, as platform infrastructures (D'Andréa, 2023), change the ways in which knowledge published in academic journals circulates. Access to scientific production through these structures also reflects the ways of thinking of those who program them, allowing a "neoliberal rationality" (Grohmann, 2020) to prevail, highlighting a problem of knowledge and power relations with implications for Brazilian science.

Although the management of academic journals is governed by a series of national and international ethical guidelines, they do not usually address the conditions of dissemination of scientific information in the digital environment. The inadequacy of these guidelines becomes even clearer after the publication of articles in journals, when visibility is mediated by algorithmic sorting that has become ubiquitous in the circulation of knowledge, given the creation of specific tools for searching academic texts, such as Google Scholar.

The penetration of online platform infrastructures into scientific practices and text production—phenomena described as the platformisation of science (D'Andréa, 2023)

and the platformisation of text (Cruz, 2023)—is reconfiguring the way science is communicated, evaluated, and metrified, especially in the editorial flows of open access journals, but also in science communication practices of authors and/or science communicators themselves (D'Andréa and Costa, 2023; Furtado and D'Andréa, 2024; Costa and Cruz, 2024). This demonstrates the extent to which infrastructures mediate the relationship between science and society at different levels, from the work commonly associated with the "peer-to-peer" dimension to what is intended to be a dialogue with a wider non-specialist audience, such as journalists.

We therefore believe that the circulation of knowledge is at risk of biased mediation. Google's classification does not necessarily promote or suppress articles per se, but rather the ability to find them or reach audiences, as curators work according to criteria of popularity and similarity (Ochigame, 2021) and profiling (Castro, 2019). This dynamic also presents publishers with an ethical dilemma between relevance and algorithmic visibility, especially considering the growing metrification of science (Furtado and D'Andréa, 2024), driven by the mediation of infrastructural platforms (D'Andréa, 2023), and the changes proposed by Brazilian government agencies in the criteria for evaluating national scientific production (D'almonte et al., 2024).

Conclusions

Digital visibility could enhance scientific knowledge sovereignty and combat disinformation, as articles gain exposure through search trends and keywords. However, emphasizing indicators like PDF downloads or views may create a misleading perception of article quality before thorough academic scrutiny, leading to citations based on metrics rather than content. This dynamic stresses knowledge-power relations, as digital visibility may overshadow scientific contributions, distorting how research is evaluated and used in academia and society.

This analysis reveals the fragility of epistemic sovereignty and the need to think tactically about subversive practices and emancipatory alternatives (Ricaurte, 2023). Based on the analyzed data, it is possible to infer the benefits of science communication practices guided by digital marketing, as in the case of direct traffic data, which includes access by directly typing the journal's address into the browser, QR codes, browser history, and saved links. This type of traffic suggests that these actions are fundamental to increasing the circulation of journal articles. Referral traffic was also relevant, driven by links on sites such as Google Scholar, Academia.edu, ResearchGate, and Universities' websites. However, the impact of social media platforms in this process does not overcome the challenges related to the monopolistic role of Google/Alphabet in the dynamics of access to scientific knowledge published in open access journals. These findings can guide both editorial decisions—such as the strategic use of SEO optimized titles and science communication strategies to increase other flows of traffic— and should be part of ethical discussions about good practice in online open access journals.

References

Barbosa, A. C., Herlo, B., & Joost, G. (2024). Soberania digital entre os perigos das

agendas hegemônicas e as possibilidades de abordagens alternativas. *Liinc em Revista*, 20(2), e7312. https://doi.org/10.18617/liinc.v20i2.7312

Castro, J. C. L. de. (2019). Plataformas algorítmicas: Interpelação, perfilamento e performatividade. *Revista Famecos*, 26(3), 1–24. https://doi.org/10.15448/1980-3729.2019.3.33723

Costa, V. S., & Cruz, L. (2024). "Trabalho de plataforma" e divulgadores de ciência: Precarização e novos mediadores. *Revista Latinoamericana De Ciencias De La Comunicación*, 23(46). https://doi.org/10.55738/alaic.v23i46.1138

Cruz, L. T. S. (2023). *Plataformização do texto: Reconfiguração de práticas de escrita e edição a partir de mediações algorítmicas do Google*. [Tese de doutorado não publicada]. Centro Federal de Educação Tecnológica de Minas Gerais. https://sucupira legado.capes.gov.br/sucupira/public/consultas/coleta/trabalhoConclusao/viewTrabalhoConclusao.jsf?popup=true&id_trabalho=14099395

D'Almonte, E. F., Santos, A. O., Silva, I. M., Silva, R. S., Costa, V. S., & D'Andrea, C. F. B. (2024). Periódicos científicos na área Comunicação e Informação: Consolidação do índice h e as questões éticas sobre sua utilização. *Em Questão*, 30, e-136673. https://doi.org/10.1590/1808-5245.30.136673

D'Almonte, E. F., & Santos, A. O. (2024). Regulamentação das plataformas digitais: Entre a soberania digital e o transnacionalismo. *E-Compós*, 27. https://www.e compos.org.br/e-compos/article/view/2876

D'Andréa, C. (2023). Infraestruturas, inteligência artificial e outras tecnosoluções: Google e a plataformização da emergência climática. *Revista da UFMG*, 30(fluxo contínuo). https://doi.org/10.35699/2965-6931.2023.47985

d'Andréa, C., & Costa, V. (2023). One biologist, one million deaths: Expertise between science, social media, and politics during the COVID-19 pandemic in Brazil. *Journal of Digital Social Research*, 5(3), 18-40. https://doi.org/10.33621/jdsr.v5i3.125

Furtado, J. A. (2003). *O papel e o pixel*. Ciberdifusão.

Furtado, I. C. B., & D'Andréa, C. F. B. (2024). Assembleias métricas da produção científica: Um estudo sobre as práticas de publicação, metrificação e circulação na plataforma Academia.edu. *Liinc em Revista*, 20(1), e7026. https://doi.org/10.18617/liinc.v20i1.7026

Grohmann, R. (2020). A comunicação na circulação do capital em contexto de plataformização. *Liinc em Revista*, 16(1), 5145. https://doi.org/10.18617/liinc.v16i1.5145

Grohmann, R., & Barbosa, A. C. (2025). Big Tech sovereignty: Platforms and discourse of sovereignty-as-a-service. *AoIR Selected Papers of Internet Research*. https://doi.org/10.5210/spir.v2024i0.13948

Latour, B. (2011). *Ciência em ação: Como seguir cientistas e engenheiros sociedade afora*. Ed. Unesp.

Lemos, G., Espíndola, M. B., & Tosatti, N. C. M. (2024). Soberania digital: Definições, desafios e implicações na era da dataficação. *Logeion: Filosofia da Informação*, 11. https://doi.org/10.21728/logeion.2024v11e-7364

Madianou, M. (2019). Technocolonialism: Digital innovation and data practices in the humanitarian response to refugee crises. *Social Media + Society*, 5(3), 1–13. https://doi.org/10.1177/2056305119863146

Ochigame, R. (2021). *Remodeling rationality: An inquiry into unorthodox modes of logic and computation*. Massachusetts Institute of Technology.

Oliveira, T., & Pinto, T. M. (2024). Knowledge and emancipation: From epistemic injustice to digital and epistemic sovereignty in Latin America. *Journal of Digital Social Research*, 6(3), 40–58. https://publicera.kb.se/jdsr/article/view/33244

Ricaurte, P. (2023). Epistemologias de dados, colonialidade do poder e resistência. *Revista Dispositiva*, 12(22), 6–26. https://doi.org/10.5752/P.2237-9967.2023v12n22p6-26

Rossetti, R., & Angelucci, A. (2021). Ética algorítmica: Questões e desafios éticos do avanço tecnológico da sociedade da informação. *Galáxia* (São Paulo), 46, e50301. https://doi.org/10.1590/1982-2553202150301

Silverman, D. (2009). *Um livro bom, pequeno e acessível sobre pesquisa qualitativa*. Bookman Editora.

Van Dijck, J. (2014). Datafication, dataism and dataveillance: Big data between scientific paradigm and ideology. *Surveillance & Society*, 12(2), 197–208. https://doi.org/10.24908/ss.v12i2.4776

Wardle, C., & Derakhshan, H. (2017). *Information disorder: Toward an interdisciplinary framework for research and policy making*. Council of Europe Report. https://edoc.coe.int/en/media/7495-information-disorder-toward-an-interdisciplinary framework-for-research-and-policy-making.html