

THE COUNTERMOVEMENT TO OPEN SCIENCE: FRONTAL RESISTANCE, MARKET ABSORPTION AND EPISTEMIC DELEGITIMATION

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Abstract: Open Science has become an international normative agenda after the 2021 UNESCO Recommendation, yet resistance to it is often treated as isolated barriers. This paper interprets these forces as a countermovement, drawing on social movement and countermovement theory. Based on documentary analysis of a corpus of 27 sources and an analytical reconstruction of the Brazilian case between 2019 and 2022, three modalities are identified: frontal resistance, market absorption and epistemic delegitimation. The argument distinguishes open opposition exercised through the state from market capture, which incorporates the language of openness to monetize it through APCs, transformative agreements and proprietary infrastructures. The article concludes that Open Science policies focused only on frontal resistance may produce merely apparent openness, an analytical proposition that is especially relevant for the Global South.

Keywords: Open Science; Data colonialism; Article processing charges; Science policy.

Título: EL CONTRAMOVIMIENTO A LA CIENCIA ABIERTA: RESISTENCIA FRONTAL, ABSORCIÓN MERCANTIL Y DESLEGITIMACIÓN EPISTÉMICA

Resumen: La Ciencia Abierta se ha consolidado como agenda normativa internacional tras la Recomendación de la UNESCO de 2021, pero las resistencias a ella suelen tratarse como barreras aisladas. Este artículo interpreta esas fuerzas como un contramovimiento, a partir de la teoría de los movimientos y contramovimientos sociales. Con base en el análisis documental de un corpus de 27 fuentes y en la reconstrucción analítica del caso brasileño entre 2019 y 2022, se identifican tres modalidades: resistencia frontal, absorción mercantil y deslegitimación epistémica. La resistencia frontal opera mediante desfinanciamiento, censura y supresión de datos; la absorción mercantil monetiza la apertura mediante APC, acuerdos transformativos e infraestructuras propietarias; y la deslegitimación epistémica erosiona la confianza pública en la ciencia. Se concluye que las políticas de Ciencia Abierta que ignoran la captura mercantil tienden a producir una apertura aparente, proposición analítica especialmente relevante para el Sur Global.

Palabras clave: Ciencia Abierta; Colonialismo de datos; Tasas de procesamiento de artículos; Política científica.

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Datos de edición: Recibido: 04-07-2026; 2ª versión: 23-09-2026; aceptado: 29-09-2026.

1. INTRODUCTION

Open Science seeks to reorganize the production and circulation of knowledge around access to publications, data and methods. The Recommendation on Open Science, adopted by the UNESCO General Conference on 23 November 2021, represents the first international normative instrument on the subject and establishes shared definitions, values and principles for 193 Member States, treating science as a global public good (UNESCO, 2021). In little more than a decade, what began as a demand advanced by academic communities has become a reference for national and regional policies. This trajectory, however, is not linear: as openness becomes a norm, the forces that contain, redirect or hollow it out also multiply.

This reorganization is not merely a matter of science policy; it is fundamentally an information-management challenge, involving the design of open repositories, metadata standards, interoperability rules and sustainable documentary infrastructures that enable the circulation of publications, data and methods (Borgman, 2015; Suber, 2012). Consequently, the resistances examined in this article directly affect the documentary and informational infrastructure upon which Open Science relies, including digital libraries, research archives, institutional repositories and scholarly communication systems.

Academic literature often describes these forces as a list of barriers: budget cuts, publication costs, disinformation and institutional inertia. What is missing, however, is a framework capable of explaining why such resistances emerge, how they are articulated and why they tend to intensify precisely when Open Science advances. Treating them as isolated obstacles underestimates their coordination and their dependence on the degree of success achieved by the very movement they oppose.

This article argues that such resistance is better understood as a countermovement. The theory of social movements and countermovements shows that any mobilization that achieves partial success and threatens established interests tends to elicit an opposing mobilization, whose intensity varies according to the structure of political opportunities (Meyer & Staggenborg, 1996; Mottl, 1980). Applied to Open Science, this lens allows the UNESCO Recommendation to be read not only as an achievement, but also as the kind of institutional success that activates countermobilization.

The conceptual contribution of the article is twofold. First, it proposes a typology of three modalities of countermovement: frontal resistance, market absorption and epistemic delegitimation. Second, it distinguishes frontal resistance, understood as open opposition through the state apparatus, from market absorption, a modality in which the market does not oppose openness but incorporates and monetizes it, neutralizing its redistributive promise. This distinction is the article's central analytical point. The perspective of the Global South, and particularly Brazil, makes this difference especially sensitive, since it is in peripheral economies that market-captured openness becomes a new form of exclusion. The objective is to analyze how these three modalities operate and articulate with one another, taking the Brazilian case from 2019 to 2022 as a privileged empirical reference. The Brazilian case is the empirical anchor of the argument, whereas the typology is proposed as an analytical framework whose application to other countries requires comparative work. The guiding question is: how is the countermovement to Open Science structured, and why does market absorption represent the least visible and most consequential challenge, especially for countries in the Global South? The text is organized into six parts. After this introduction, the theoretical framework linking Open Science and countermovement is presented; the methodology is then described; the three modalities are analyzed; their articulation is discussed; and, finally, the conclusions are synthesized.

2. FROM OPEN SCIENCE AS A MOVEMENT TO ITS COUNTERMOVEMENT

Open Science presents the traits that sociology attributes to a social movement: a network of actors that formulates claims, mobilizes resources and disputes meanings, sustained by a framing that defines science as a common good and access to knowledge as a right.

2.1 Open Science as a social movement

This characterization is not new: previous scholarship has already framed Open Science as a broad sociotechnical and normative phenomenon driven by epistemic communities that mobilize for the democratization of knowledge. Fecher and Friesike (2014), for example, organized the debate into five schools of thought, showing that openness involves infrastructure, measurement, public participation, democratization and the pragmatics of research; Vicente-Sáez and Martínez-Fuentes (2018), in turn, define Open Science as transparent and accessible knowledge shared and developed through collaborative networks. What this article adds is the systematic application of social movement and countermovement theory to explain the reactive forces that this mobilization triggers. The institutionalization of this framing in the UNESCO Recommendation (2021), grounded in values of quality and integrity, collective benefit, equity and diversity, expresses a turning point typical of successful movements: the translation of demands into norms recognized by states. It is precisely this success that creates conditions for reaction. By proposing that Open Science be understood as a movement, this article does not rely on an external analogy, but radicalizes a dimension already present in the literature: openness is a dispute over infrastructures, norms, practices and epistemic authority.

2.2 The theory of countermovements

Mottl (1980) defines a countermovement as a mobilization that emerges in opposition to a prior movement, mirroring its form and function. Meyer and Staggénborg (1996) systematize this interaction by arguing that countermovements emerge when a movement shows signs of success and threatens established interests, and that their strength depends on the structure of political opportunities; in particular, they intensify when the state enables but does not satisfy the parties in dispute. Zald and Useem (1987) describe movement and countermovement as a loosely coupled pair in conflict, in which each side adapts tactics in response to the other. Lo (1982) highlights the role of conservative movements in containing advances perceived as threats to the established order. Because the relationship is loosely coupled, countermobilization does not need to be centrally coordinated or to name its target explicitly: it can be identified by the convergence of actions that respond to, and contain, the gains of the prior movement. This literature offers a direct precedent in the scientific field. McCright and Dunlap (2000) demonstrate how a conservative countermovement organized systematic counterclaims to challenge global warming as a social problem, producing doubt and disputing the legitimacy of climate knowledge. The mechanism, which consists of manufacturing uncertainty to neutralize a scientific agenda, reappears, with different actors, in resistance to Open Science.

2.3 Three modalities of countermovement

Drawing on this framework, three modalities through which the countermovement to Open Science is realized can be distinguished. Frontal resistance consists of open opposition, exercised above all through the state apparatus, and manifests itself in defunding, censorship and suppression of public data. Market absorption consists of the incorporation of openness by economic actors who, rather than combating it, convert it into a source of revenue and a mechanism of infrastructural control. Epistemic delegitimation consists of attacks on the credibility of science through denialism and disinformation, eroding the public trust on which openness depends. Throughout the article, “countermovement” designates the set of opposing forces, “modality” designates each of its three registers and “countermobilization” designates the process through which they are activated.

The decisive difference lies between the first two. Frontal resistance denies openness; market absorption rhetorically affirms it while hollowing it out. The latter is more difficult to identify and contest because it operates under the banner of the very movement it neutralizes: articles are published in open access, but through fees that exclude; data are opened, but on proprietary platforms that recapture them. The concept of data colonialism (Coudry & Mejías, 2019), understood as the extractive appropriation of social activity converted into data for profit, provides the key to understanding this modality in its global and asymmetric dimension.

3. METHODOLOGY

The study is qualitative and combines documentary analysis of primary sources with analytical case reconstruction. The document selection followed purposive sampling guided by the research question and by the relevance of the sources to the three analytical modalities proposed. The corpus brings together four sets of sources, which total 27 documents (Table I): international normative and policy instruments, especially the UNESCO Recommendation (2021) ($n = 4$); official records, institutional statements and studies on science funding, transparency and research evaluation in Brazil ($n = 9$); empirical and bibliometric studies on the economics and infrastructures of scholarly publishing, including studies with data disaggregated for Brazil and Latin America ($n = 11$); and documentary records and studies of episodes of suppression, opacity or delegitimation of public data in Brazil between 2019 and 2022 ($n = 3$). The theoretical literature on movements and countermovements, Open Science and data colonialism was used to build the analytical categories and is not counted as part of the empirical corpus.

The selection followed four criteria: priority given to primary or peer-reviewed sources; verifiability of quantitative data; relevance to at least one of the countermovement modalities; and capacity to illuminate the relationship between Open Science, informational infrastructures and North-South asymmetries. When used, preprint materials were identified as such in the text, tables and references (Gallardo et al., 2024; Haustein et al., 2024). Journalistic records were used solely as factual accounts of widely documented public and institutional events, and, when possible, were cross-checked with institutional statements, such as technical notes by scientific associations, to ensure reliability.

Set	Type of source	n	Documents	Main modality informed	Scope of evidence
A	International normative and policy instruments	4	UNESCO (2021); Schimmer et al. (2015); Ancion et al. (2022); OpenAIRE (2020)	Market absorption; policy directions	Global
B	Official records, institutional statements and studies on science funding, transparency and research evaluation in Brazil	9	Sociedade Brasileira para o Progresso da Ciência (2021), Sociedade Brasileira para o Progresso da Ciência (2022); Transparência Brasil (2023); Open Knowledge Brasil (2021); Costa and Gomes (2021); CAPES (2023); Cadernos de Saúde Pública et al. (2019); Muriel-Torrado et al. (2019); Felix et al. (2022)	Frontal resistance; epistemic delegitimation	Brazil
C	Empirical and bibliometric studies on economics and infrastructures of scholarly publishing	11	Global: Larivière et al. (2015); Butler et al. (2023); Haustein et al. (2024, preprint); Borrego (2023); Posada and Chen (2018). Brazil: Pavan and Barbosa (2018); Appel and Albagli (2019); Gallardo et al. (2024, preprint). Latin America: Packer (2009); Beigel et al. (2024); Debat and Babini (2020)	Market absorption	Global (5); Brazil (3); Latin America (3)
D	Documentary records and studies of episodes of suppression, opacity or delegitimation in Brazil, 2019-2022	3	Escobar (2019); Ortega and Orsini (2020); Fonseca et al. (2021)	Frontal resistance; epistemic delegitimation	Brazil
Total		27			

Table I. Composition of the documentary corpus. *Source:* prepared by the author.

The analytical procedure approximated thematic content analysis and was carried out in four stages. First, each document was read in full and registered in an analytical matrix that recorded the modality or modalities it informs; the mechanism described (for example, defunding, secrecy, article processing charges, transformative agreements, vertical integration of infrastructures, denialism or prestige metrics); the type of evidence (normative instrument,

official record or institutional statement, peer-reviewed empirical study, preprint or documentary report); and the geographic scope of the evidence (Brazil, Latin America or global). Second, the documents were categorized according to the three modalities previously derived from the theoretical framework: frontal resistance, market absorption and epistemic delegitimation; the categories were defined deductively and refined during reading. Third, the Brazilian case was analytically reconstructed in light of the notion of political opportunity structure, to examine how specific institutional conditions allowed the state apparatus, the publishing market and regimes of scientific prestige to operate as distinct registers of countermobilization. Fourth, whenever possible, claims were contrasted with sources of a different type, and the scope of each claim was qualified according to the type and coverage of its evidence.

The evidential basis is not symmetrical across the three modalities, and this asymmetry is assumed as part of the design. Frontal resistance (section 4.1) and epistemic delegitimation (section 4.3) are reconstructed mainly from Brazilian primary and documentary evidence. Market absorption (section 4.2) operates through transnational markets, so its structural dimension is necessarily documented with global bibliometric evidence; to anchor it in the case, this evidence is combined with studies that disaggregate data for Brazil (Appel & Albagli, 2019; Gallardo et al., 2024; Pavan & Barbosa, 2018). Claims about Brazil in section 4.2 are therefore restricted to what these sources support, while data on the global publishing market are presented as context rather than as evidence of the Brazilian case.

The 2019-2022 bracket corresponds to a specific governmental cycle in Brazil in which the state apparatus was explicitly mobilized against scientific openness, offering a paradigmatic case of frontal resistance. The closing date (2022) marks the end of that cycle, allowing the analysis to isolate its effects while acknowledging that market absorption and epistemic delegitimation extend beyond any single administration.

Several limitations are acknowledged. The design is neither statistical nor aimed at sample representativeness; its generalization is analytical, that is, from the case to the theoretical framework. The focus on Brazil privileges depth over systematic comparison across countries, a comparison that remains for future research. In addition, because the study is based on documentary reconstruction, it depends on the public availability and stability of the records analyzed. Finally, the study does not claim that the actors involved in each modality acted in coordination or with the declared purpose of opposing Open Science; the countermovement is identified by the convergence of effects on the conditions of openness, not by the intentions of individual actors.

4. ANALYSIS

4.1 Frontal resistance: the state against openness

The Brazilian case between 2019 and 2022 offers the clearest expression of frontal resistance, in which the state apparatus is mobilized against the goods that Open Science seeks to protect: reliable public data and stable research funding. At the budgetary level, in October 2021, of a R\$ 690 million supplementary credit planned for the Ministry of Science, Technology and Innovations, only approximately R\$ 89.8 million remained after a reallocation determined by the economic area, a reduction that compromised approximately 90% of that credit (Sociedade Brasileira para o Progresso da Ciência [Sociedade Brasileira para o Progresso da Ciência, 2021]). The picture worsened the following year: in 2022, after a new freeze of approximately R\$ 2.5 billion, the science and technology budget became the lowest in a decade (Sociedade Brasileira para o Progresso da Ciência, 2022). The episode was part of a broader pattern of contingency affecting the National Fund for Scientific and Technological Development and of compression of research funding, strangling the infrastructure without which open practices cannot be sustained.

Budget cuts are not, in themselves, opposition to Open Science: between 2019 and 2022 they affected science and technology as a whole and were partly framed as fiscal austerity. They are treated here as frontal resistance only insofar as they reached the infrastructure, services and public data that the UNESCO Recommendation identifies as conditions for openness. The argument is therefore not that the government targeted Open Science as such, but that

defunding and the discrediting of public science converged in effects that eroded the material basis of openness. The collapse of the information systems of the National Council for Scientific and Technological Development (CNPq) in July 2021 illustrates this convergence. The Lattes Platform, the public national infrastructure of researcher curricula and research groups used throughout the Brazilian science system, remained offline for 16 days; while the agency attributed the failure to a defective hardware component, the Sociedade Brasileira para o Progresso da Ciência linked it to the financial strangulation of CNPq (Costa & Gomes, 2021). Whatever its proximate cause, the episode exposed the fragility of public scientific information infrastructures under budget compression.

At the level of data, the episode involving Brazil's National Institute for Space Research (INPE) in 2019 condensed the logic of frontal resistance. Faced with monitoring data indicating an approximately 88% increase in deforestation in the Amazon in June of that year, the government's response was to publicly disqualify the information and remove the institute's director, Ricardo Galvão, who defended it. The conflict showed that the target was not an isolated indicator, but the authority of public science to produce and disseminate data that contradicted official discourse (Escobar, 2019). To this were added the expansion of secrecy and the weakening of transparency mechanisms: the improper use of the one-hundred-year secrecy rule to deny access-to-information requests quadrupled compared with previous administrations, and 80% of improper denials recorded between 2015 and 2022 were concentrated in that government (Transparência Brasil, 2023). In the health field, independent monitoring recorded a federal data blackout during the pandemic, with the interruption of the disclosure of microdata by the Ministry of Health (Open Knowledge Brasil, 2021).

Read through countermovement theory, this modality corresponds to the capture of the state by forces hostile to openness. The political opportunity structure, in Meyer and Staggenborg's (1996) terms, was inverted: the apparatus that, according to the UNESCO Recommendation, should enable Open Science began to operate against it. The data episodes (INPE, the expansion of secrecy and the pandemic data blackout) provide the most direct link between state action and openness, since in them the object of the action was the circulation of public data itself; the budgetary evidence supports the claim only through its effects on infrastructures, as discussed above. Frontal resistance is, however, visible and therefore contestable: it provokes reactions from the scientific community, scientific associations and accountability institutions.

4.2 Market absorption: openness captured by the market

The second modality is less visible and more consequential. The evidence combines global data on the publishing market, which frame the conditions under which Brazilian researchers publish, with studies disaggregated for Brazil. Scholarly publishing remains concentrated: Larivière et al. (2015) show that five large publishers accounted, in 2013, for more than half of all indexed articles, a proportion that reached approximately 70% in the social sciences, with operating margins in the scientific publishing segment frequently exceeding 30%, high levels when compared with the technology sector. The decisive point is that the transition to open access did not dismantle this oligopoly; it reconfigured its revenue source.

Data on article processing charges make this reconfiguration measurable. Butler et al. (2023) estimate that authors paid approximately US\$ 1.06 billion in fees to the five largest publishers between 2015 and 2018, of which US\$ 612.5 million were paid in fully open access journals and US\$ 448.3 million in hybrid journals, which also charge subscriptions. In a preprint not yet peer reviewed, Haustein et al. (2024) estimate that global spending on fees paid to six publishers reached US\$ 8.349 billion between 2019 and 2023, with annual expenditure almost tripling, from US\$ 910.3 million in 2019 to US\$ 2.538 billion in 2023, and MDPI leading revenue in 2023 with US\$ 681.6 million. These figures do not merely represent editorial profit; they represent the conversion of openness into a commodity. In this model, openness ceased to be a barrier to profit and became its new vehicle.

The Brazilian data point in the same direction. Using Web of Science data, Pavan and Barbosa (2018) identified 63,847 open access documents by authors with Brazilian affiliation published between 2012 and 2016; 59% of them appeared in journals that charge APCs, with an estimated total expenditure of approximately US\$ 36 million and a

weighted average of about US\$ 958 per document. Survey evidence shows how this cost is distributed. In a 2023 survey of CNPq research productivity fellows, reported in a preprint, 65.9% of the 6,288 Brazilian respondents had published in journals that charge APCs in the previous five years; among them, the most frequent means of payment was personal funds (34.5%), ahead of research project funds (29.4%) and specific institutional APC funds (13.1%), and one third (33.5%) reported having collaborated with co-authors because these could afford the charges (Gallardo et al., 2024). In Brazil, therefore, the cost of commercial openness falls largely on individual researchers and project budgets rather than on explicit institutional policies, which makes it less visible and more unequally distributed.

So-called transformative agreements, proposed as a bridge toward transition (Schimmer et al., 2015), tend to consolidate this absorption: by combining subscriptions and fees in contracts with limited transparency, they preserve the revenues of established publishers and displace, rather than eliminate, the economic barrier. The effect falls unequally on Global South. Borrego (2023) notes that most open articles come from high-income countries and that fees operate as an effective barrier to publication for researchers in low-income countries, who remain excluded even from mirror journals.

The Brazilian and Latin American experience also shows that market absorption is not inevitable. SciELO, created in Brazil in 1998 and later expanded into a regional network, consolidated a model of open access based on publicly funded, non-commercial publishing infrastructure, in which access to the means of publication matters as much as access to content (Packer, 2009). Journals indexed in SciELO accounted for 67% of the open access documents by Brazilian authors identified by Pavan and Barbosa (2018), and the adoption of APCs by Brazilian open access journals remained limited, although it advanced in fields such as agricultural and health sciences (Appel & Albagli, 2019). Studies of the production indexed in SciELO and Redalyc document the disciplinary diversity, institutional collaboration and multilingualism of this regional circuit, in which most journals do not charge authors (Beigel et al., 2024). SciELO is thus both the empirical counterpoint that shows the viability of non-commercial openness in the Global South and the type of infrastructure that market absorption and prestige-based evaluation tend to devalue (section 4.3), which is why Latin American authors have warned against importing APC-centered policies such as Plan S (Debat & Babini, 2020). As a counterpoint of broader scope, Diamond Open Access, without charges for authors or readers, supported by community infrastructures and public or institutional funding, offers an alternative more consistent with openness as a common good (Ancion et al., 2022; Suber, 2012). APC-based openness, by contrast, redistributes visibility according to the capacity to pay.

Market absorption is not limited to charging. Large publishers have vertically integrated the research workflow, from discovery to evaluation and metrics, by controlling proprietary analytical infrastructures (Posada & Chen, 2018). Private platforms centralize academic traffic under opaque algorithms. It is here that data colonialism (Couldry & Mejias, 2019) becomes operative: scientific activity is converted into extractable and monetizable data, and openness, emptied of its redistributive content, becomes a frontier of accumulation. For the Global South, this means opening its own data to infrastructures controlled in the North, such as proprietary metrics and analytics platforms (SciVal, Dimensions, Web of Science), that recapture peripheral scientific activity as a capitalizable asset, without redistributing value.

4.3 Epistemic delegitimation: attacks on the credibility of science

The third modality attacks the basis on which openness depends: public trust in science. In Brazil, the period examined was marked by the discrediting of science and public research institutions and by hostility toward expertise (Ortega & Orsini, 2020). The COVID-19 pandemic exposed the consequences of this erosion, with the promotion of pseudoscience, the defense of treatments without evidence and the weakening of evidence-based public health responses (Fonseca et al., 2021). Disinformation, circulating through digital channels, deteriorates the credibility of scientific sources and demobilizes the public engagement on which citizen science depends (Wardle & Derakhshan, 2017). This modality reproduces the mechanism described by McCright and Dunlap (2000): the deliberate production

of doubt as a tactic of containment. It is joined by a softer form of epistemic conservatism, internal to academia, expressed in attachment to traditional prestige metrics, impact factor and citation indexes, and in resistance to transparency practices such as open data and open peer review (Allen & Mehler, 2019).

In the Brazilian context, this institutional inertia is materially embodied in graduate-program evaluation and recognition systems, especially the Qualis classification linked to the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), which has historically privileged journals indexed in proprietary commercial databases such as Web of Science and Scopus. The Qualis Referência methodology, proposed in 2019 for the 2017-2020 evaluation cycle, made this link explicit by stratifying journals mainly according to their percentile in CiteScore (Scopus) and in the Journal Impact Factor (Web of Science), using the Google Scholar h5-index for titles outside those databases (Cadernos de Saúde Pública et al., 2019; CAPES, 2023).

Modality	Logic of action	Actors and mechanisms	Empirical evidence	Scope of evidence
Frontal resistance	Open opposition to openness through capture of the state apparatus.	Governments and public bodies: defunding, censorship, suppression and delegitimation of public data.	Brazil, 2019-2022: contingency of the FNDCT and loss of approximately 90% of the MCTI supplementary credit (Sociedade Brasileira para o Progresso da Ciência, 2021); 16-day outage of the Lattes Platform (Costa & Gomes, 2021); INPE crisis and removal of Ricardo Galvão (Escobar, 2019); expansion of secrecy (Transparência Brasil, 2023).	Brazilian primary and documentary evidence
Market absorption	Incorporation and monetization of openness without declared opposition.	Publishers and platforms: APCs, transformative agreements, verticalization of infrastructures, data extraction.	US\$ 8.3 billion in APCs (2019-2023) paid to six publishers (Haustein et al., 2024, preprint); oligopolistic concentration (Larivière et al., 2015); Brazil: 59% of open access documents in APC journals, 2012-2016 (Pavan & Barbosa, 2018); APCs paid mainly with personal and project funds (Gallardo et al., 2024, preprint).	Global bibliometric evidence combined with studies disaggregated for Brazil
Epistemic delegitimation	Attack on the credibility of science and public trust.	Denialism, disinformation and deliberate production of doubt; attachment to traditional prestige metrics.	Discrediting of science and hostility to expertise in Brazil (Ortega & Orsini, 2020); treatments without evidence during the pandemic (Fonseca et al., 2021); information disorder (Wardle & Derakhshan, 2017); Qualis Referência anchored in commercial database metrics (Cadernos de Saúde Pública et al., 2019; Felix et al., 2022).	Brazilian documentary evidence and peer-reviewed studies; conceptual literature

Table II. Modalities of the countermovement to Open Science. **Source:** prepared by the author.

This choice was criticized within the scientific community. Editors of Fiocruz journals argued that indicators built for commercial databases favor the research agendas of hegemonic countries, encourage better-funded programs to pay publication fees in the journals of large international publishers and disregard indicators such as indexing in SciELO (Cadernos de Saúde Pública et al., 2019). Information Science graduate programs warned that the new

classification privileged titles of commercial publishers while ignoring regional services such as SciELO, Redalyc, Latindex and DOAJ (Muriel-Torrado et al., 2019), and a longitudinal study of Qualis criteria concluded that the reform meant a return to an eminently quantitative evaluation based on Scopus and Web of Science metrics (Felix et al., 2022). By tying academic careers and graduate-program evaluations to these metrics, the system inadvertently reinforces the same proprietary infrastructures that the market-absorption modality exploits, creating a feedback loop between internal epistemic conservatism and external market capture. **Table II** summarizes the three modalities, their logic of action, actors, corresponding empirical evidence and the scope of that evidence.

5. DISCUSSION

The three modalities do not constitute isolated obstacles, but articulated registers of the same countermovement reacting to the institutional advance of Open Science. They operate simultaneously, although at different scales and temporalities. Frontal resistance tends to be more visible and dependent on political conjunctures; epistemic delegitimation combines public campaigns of discredit with internal inertias in the academic field; and market absorption operates structurally, cutting across governments, agencies, universities and evaluative practices. The UNESCO Recommendation (2021), by codifying openness as a norm without ensuring the means for its full realization, configures precisely the condition that Meyer and Staggenborg (1996) associate with the intensification of countermobilization: the state, and the scientific field, enables but does not satisfy.

The analysis also allows the relations among the modalities to be specified. They reinforce each other through at least three mechanisms. First, frontal resistance feeds market absorption: when public funding and infrastructures are compressed, researchers turn to commercial channels and pay for them with their own resources, as suggested by the Brazilian survey data on APC payment with personal funds (Gallardo et al., 2024). Second, epistemic delegitimation, in its internal form, channels prestige toward the proprietary indexes that market absorption exploits; Qualis Referência is the Brazilian mechanism through which this channeling became institutional (Cadernos de Saúde Pública et al., 2019). Third, market absorption may supply material for delegitimation, since associating openness with fees or predatory practices can be used to discredit Open Science itself. The first two mechanisms are supported by the Brazilian evidence examined here; the third is a hypothesis that requires specific testing.

There is no fixed hierarchy among the modalities, but there is a difference in persistence. Frontal resistance may recede with changes in government or stronger institutional control; market absorption, however, tends to survive such changes because it is embedded in contracts, platforms, indicators and publishing routines. This is why it is especially dangerous for Open Science policies: it allows the language of openness to be preserved while its redistributive effects are neutralized. Epistemic delegitimation, in turn, functions as a condition of possibility for the other two, since it reduces society's capacity to defend public data, scientific funding and common informational infrastructures.

The distinction between frontal resistance and market absorption has practical consequences. Policies that defend budgets, transparency and integrity confront frontal resistance, and necessarily so. But if they ignore market absorption, that is, the escalation of fees, the opacity of transformative agreements and the verticalization of infrastructures, they deliver merely apparent openness, in which knowledge circulates under private control and through payment.

Brazil synthesizes the argument, within the limits of a single case. It was the target of frontal resistance between 2019 and 2022; it is structurally exposed to market absorption through dependence on commercial publishers and platforms and through the barrier of fees; and it faces the epistemic delegitimation of denialism. In the Brazilian context, this position reveals what is at stake: market-captured openness does not correct asymmetry but deepens it, converting peripheral science into a provider of data and a payer of fees. Confronting the countermovement therefore requires action on all three fronts, with particular attention to the one that disguises itself as an ally.

For the Global South, the implications are formulated as analytical propositions rather than empirical generalizations. Countries with a tradition of public, non-commercial scholarly communication, such as those that built SciELO and Redalyc, face a specific risk: that APC-centered policies designed in high-income countries displace infrastructures that already achieved openness without charging authors (Debat & Babini, 2020). There, the most consequential form of the countermovement may be less the temporary hostility of a government than the gradual replacement of common infrastructures by market solutions presented as the modern form of openness. Testing this proposition in other countries of Latin America, Africa and Asia is the main comparative task that follows from this study.

6. CONCLUSIONS

This article proposed reading resistance to Open Science as a countermovement, rather than as a set of isolated barriers. The typology of three modalities (frontal resistance, market absorption and epistemic delegitimation) and, above all, the distinction between denying openness and absorbing it organizes a more precise understanding of the phenomenon. The Brazilian case from 2019 to 2022 made it possible to observe the three modalities in operation with different evidential bases: frontal resistance and epistemic delegitimation were documented with Brazilian primary and documentary sources, while market absorption was documented with global evidence combined with data disaggregated for Brazil. The case suggests why market absorption is the least apparent and most consequential challenge; the extension of this conclusion to other countries of the Global South remains a proposition to be tested comparatively.

Although the empirical focus privileges the 2019-2022 period, the modalities of market absorption and epistemic delegitimation reveal structural continuity independent of governmental cycles, reinforcing the thesis that the countermovement persists as Open Science advances institutionally.

Policy directions follow from this. Advancing Open Science requires public and community infrastructures for data and publishing, models that dispense with author fees, such as Diamond Open Access, and legal protection of budgets and public data against capture. More concretely, it requires documentary and informational strategies: strengthening institutional and disciplinary repositories as public archival infrastructures; promoting green open access as a direct countermeasure to oligopolistic market capture; adopting non-proprietary identifiers and open metadata standards, such as ORCID and OpenAIRE guidelines, to reduce dependence on commercial analytics platforms; recognizing regional non-commercial infrastructures, such as SciELO and Redalyc, in research evaluation systems; and designing South-South cooperation networks that share indexing, curation and preservation capacities outside dominant Northern infrastructures (OpenAIRE, 2020; Suber, 2012). It also requires confronting disinformation through information literacy. Openness as a common good will not be realized through the rhetoric of access, but by confronting the three modalities that contain it, especially the one that advances under the banner of the movement itself.

7. FUNDING

This work was supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brazil, through a Research Productivity Fellowship (PQ), grant no. 305515/2024-1.

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