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The concept of conspiracy theories in controversies about the flat-earth movement[+*]

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Abstract

The concept of conspiracy theories has become a matter of concern in academic and media discussions about scientific denialism, being associated with different cultural forms: vaccine mistrust, assumptions about electoral fraud, etc. In this article, we rely on controversy mapping methodologies in order to follow how the concept of conspiracy theories was mobilized in controversies about the flat-earth movement, investigating how actors produced associations in a social media (Facebook). We conclude that the concept of conspiracy theories was transformed, by the action of specific actors, into a derogatory category to encompass denialist phenomena, such as the flat-earth movement.
Keywords:

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I. Introduction

Conspiracy theories have been the object of study from diverse perspectives, that have associated them with distinct sociocultural forms. From narratives with sociopolitical nature to those predicting about the malevolence of societies and secret groups, such as the

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Illuminati, Masonry, Pizzagate, and QAnon (HOSFTADTER, 2008; TUTERS; JOKUBAUSKAITĖ; BACH, 2018; TOLLEFSON, 2021); encompassing the weighting about conspiracies regarding public health events, such as mistrusts about the origin of COVID-19 and HIV, the production of vaccinees, the adherence of treatments, and the use of masks (JOLLEY; DOUGLAS, 2014; WOOD; OLIVER, 2014; BOGART *et al*., 2010; 2011; 2016; JOLLEY; DOUGLAS, 2017; ZOUMMPOURLIS *et al*., 2020), without mentioning other examples related to technical-scientific topics, as for the suspicions on the actions of the international scientific community in the face of climate changes (DOUGLAS; SUTTON, 2015), and theses on a presumed conspiracy involving NASA, governments, and scientific community with the purpose of hiding an alleged truth about Earth flat shape (ALBUQUERQUE; QUINAN, 2019; MARTINS, 2020).

Following this, a relevant question worth mentioning is that not all conspiracy theories can be qualified as false by definition. Some conspiratorial rumors, such as the ones that emerged from the Watergate case, in the United States of America, involving suspicions about ex-president Nixon being involved in an attack on the Democratic National Committee head office, started with an apparently bizarre conspiracy theory, but ended up revealing themselves as truths (WOOD; DOUGLAS; SUTTON, 2012). Maybe this fact does not seem so evident due to the stigma conspiracy theories carry, above all in cases in which the conspiracy arguments defended are little supported by empirical evidence or by the scientific community, factors that commonly lead to isolation and labeling of the individuals involved (LANTIAN *et al*., 2018; JOLLEY; MELEADY; DOUGLAS, 2017).

Therefore, although openly false or unjustified arguments might be associated with conspiracy theories, the epistemic formation of this concept should not be reduced to these occurrences, an assumption that made us inquire about the motivations that can make people undertake this type of association. Considering this issue, our objective in this article was to map mobilizations of the concept of conspiracy theories in controversies about the flat-earth movement on Facebook, analyzing how these two phenomena might be conceptually related. To obtain data from this media, we used the platform Crowdtangle. As the research methodology, we based this study on the contributions of Controversy Mapping (VENTURINI; MUNK, 2021) and the Actor-Network Theory (ANT) premises (LATOUR, 2011; 2012).

We consider this attempt reasonable due to the emerging uncertainties around the flat-earth conception itself. As a cultural phenomenon usually linked to conspiracism (ALBUQUERQUE; QUINAM, 2019; SHAHEED, 2019; BONFIM; GARCIA, 2021), its existence extrapolates the simple relation with allegations accusing actors of secretly acting to hide the supposed truth about the shape of Earth. This is because the hypothesis of Earth's flatness has historical roots in the cosmologies of ancient writings, and controversies involving disputes with rival cosmological models gain greater prominence only with the advent of modernity (GARWOOD, 2001; MILNER; SHERMER, 2015; GARWOOD, 2013).

Therefore, we seek to explore this scenario in a way that answers the following question: In which ways did the actors of this social media associate flat-earth and conspiracy theories?

To follow these intentions, this article was subdivided into four topics. On the following topic, we undertake a general overview of controversies involving the flat-earth hypothesis, aiming to subsidize the discussions with historical examples and conceptual foundations. Then, we discuss the methods used in the research, outlining step-by-step procedures carried out to accomplish the intended objectives. Sequentially, we present the major results obtained, discussing them according to the perspectives undertaken. Lastly, we organize some conclusions, defending the argument that the concept of conspiracy theories was transformed into a derogatory category to encompass distinct cultural forms.

II. Brief overview involving the controversies about flat-earth

Controversies involving the hypothesis of Earth's flatness have gained emphasis in digital contemporaneity. By controversies, we refer to situations in which the actors involved in discussions not only disagree but agree about this disagreement (VENTURINI, 2010).

As Martins (2020) discussed, the collective aspect of defense of flat-earthers' arguments, as well as certain characteristics of their discourses, like the selectivity bias in the use of information and the ambiguity in the face of scientific knowledge, makes the digital terrain favorable for its dissemination. It probably occurs due to the characteristic structures of these spaces gathering discussion forums, blogs, and audiovisual platforms where the content filter is little or not regulated, facilitating the proliferation of polemic or viral content (ALBUQUERQUE; QUINAN, 2019).

Despite the recent mediatic boom, the flat-earth theory foundations date back to ancient times. Registries of flat cosmologic models, projected from a tripartite universe (heaven, earth, and underworld), were found in artifacts left by Sumerian and Babylon people, inhabitants of the Mesopotamia region between 4,500 and 500 B.C. Later, and independently, Egyptians and Hebrews conceived similar cosmologic models, geographically and theoretically influencing the creation myth of the biblical Old Testament. In fact, "claims that the Bible is a 'flat-earth book'" find historical relation to ancient cosmologies (GARWOOD, 2013, p. 24).

Beyond mythological roots, flat-earthers' hypotheses escaped the epistemic authority of lights and raised followers in modernity. A pioneering figure in this period was the self-taught inventor named Samuel Birley Rowotham (1816-1884), known by the pseudonym "Parallax". Founder of a philosophical field called "zeteticism", he also developed a complete cosmologic model, containing a circular, static, with a central pole Earth, surrounded by an extensive wall of ice. The Sun, moon, and planets would surround Earth at a 700 miles height, and phenomena such as days, nights, seasons of the year, and circumnavigation were all explained in detail. Parallax wandered around Europe sharing his flat-earther's theses, taking

part in public audiences in mechanic institutes, Athenaeus, and astronomy assemblies, raising thousands of supporters (GARWOOD, 2001).

One of Parallax's followers was the British cleric John Hampden. Known for his staunch anti-evolutionism, he judged Sciences as a form of destroying occidental Christian morality. Moreover, he was opposed to heliocentric interpretations with great fervor: "Let this groundless fraud be at length resisted, and let our children no longer be taught that we are spun through the air like cockchafers, at the rate of thousands of miles an hour" (HAMPDEN, 1869, p. 32-33). His discomfort with the political and epistemic arising of Science in the XIX Century made him challenge scientists and researchers of that time. On the Wednesday of January, 12 of that year, he proposed a bet, published in the British magazine Scientific Opinion, directed to any public figure from the United Kingdom that could prove to him the rounding shape of Earth:

> *What is to be said of the pretended philosophy of the 19th century, when not one educated man in ten thousand knows the shape of the earth on which he dwells? Why, it must be a huge sham! The undersigned is willing to deposit from £50 to £500, on reciprocal terms, and defies all the philosophers, divines, and scientific professor in the United Kingdom to prove the rotundity and revolution of the world from Scripture, from reason or from fact. He will acknowledge that he has forfeited his deposit, if his opponent can exhibit, to the satisfaction of any intelligent referee, a convex railway, river, canal or lake* (GARWOOD, 2013, p. 82).

The text caused strangeness "among the paper's educated readership, who were more accustomed to debates about whether the earth was an oblate or a prolate spheroid than whether it was round or flat" (GARWOOD, 2013, p. 82). In fact, the bet stirred the affections of part of the British scientific community, that experimented an accelerated rhythm of professionalization of scientific subjects, the compulsory insertion of state education, as well as the decentralization of university education. Ignored by figures such as Charles Darwin and Charles Lyell, this attempt was accepted by the naturalist Alfred Russel Wallace, known for having elaborated a theory about the species' evolution simultaneously with Charles Darwin. Moved by financial needs and some peer support, he accepted the challenge.

Alfred Russel Wallace and John Hampden got together on March 1870, at the north of Old Bedford canal, nearby London, to fulfill the bet. They met each other with the company of three referees (Doctor Coulcher, from Wallace's side, William Carpenter; from Hampden's side; and John Henry Walsh as a neutral referee), responsible for judging an experiment projected by the naturalist. The objective of it was the following: with the help of a telescope, measure the height of marker disks placed through the 10 kilometers of the waterway. If all placed disks were leveled, that would be a sign of the water's surface planeness, giving the win to Hampden. If the contrary occurred, Wallace would win the dispute, once the existence of an unevenness would be the proof of water convexity, corroborating Earth's roundness (GARWOOD, 2001; MILNER; SHERMER, 2015).

After the procedure, an inflection very close to the calculated value from Earth dimensions was found and Wallace was declared the winner (SHERMER, 2002). However, the decision was given only a few days after the event under strong unwillingness by Hampden, who did not trust the decision conferred by the official referee, John Henry Walsh, which was divergent from his referee, William Carpenter. Dissatisfied with the loss, the flat-earther started teasing the naturalist and his family throughout the years after the feud.

Due to the unfolding of the controversy, Wallace ended up losing the amount received (and even more than that) in judicial conflicts, besides having his reputation tarnished by the scientific community's view. As pleaded by the botanic Joseph Hooker, all the fuss caused around the dispute "was 'not honourable to a scientific man, who was certain of his ground" (GARWOOD, 2001, p. 107). Moreover, he was reputed for exploiting the ignorance of the flat-earther, making the unnegotiable fact of the globular shape of Earth a debatable question. "Reflecting on the controversy, Proctor concluded that the scientific profession ultimately only 'suffers by such controversy… which equalises in the eyes of outsiders the ignorant and well-informed'" (GARWOOD, 2001, p. 140).

On one side, certain characteristics of flat-earther's theses, such as the ones defended by Parallax and John Hampden, corroborate the arguments linked to hypotheses of flat Earth to conspiracy theories. As reminded by Garwood (2013), Hampden was in panic in 1870, because, according to his assumptions, "Britain was in the grip of a heinous conspiracy involving the press, the pulpits and the platforms of learned societies, all of whom were in league with science" (p. 75). Parallax also used to recur to conspiracy explanations to justify his yearnings: "Christianity, he claimed, was being destroyed by science and his campaign was an attempt to right the wrong" (GARWOOD, 2013, p. 71).

However, flat-earther's theses also showed themselves enmeshed in epistemic disputes about the real shape of the Earth, as well as to ancient cosmologic roots and biblical foundations. In consonance with this dubiousness, some emerging discussion in the scientific academy has been treating the current flat-earth movement as a conspiracy "to the extent that it challenges scientific evidence heavily documented about the spherical shape of Earth" (ALBUQUERQUE; QUINAN, 2019, p. 87). Others consider this movement as a problem associated with post-truth dynamics (MARTINS, 2020), with denialism and anti-scientism (MARINELI, 2020). Regarding this, some authors warn about the fact that flat-earthers, in general, repudiate this type of association (MARTINS, 2020).

Following this, if we assume a conspiracy theory as an explanation that "postulates [about] a group of agents working together in secret, often, though perhaps not always, for a sinister purpose" (COADY, 2006, p. 02), how does this concept associate itself with the flat-earth movement? By dealing with a concept – of conspiracy theories – that, according to Napolitano and Reuter (2021), can be characterized for carrying an inherent derogatory meaning to its expression, then, how can the link to flat-earth movement operate in social situations? Could we admit it as part of its edification as social stigma (LANTIAN *et al*.

2018)? Our attempts in this research aimed at exploring some implications around these questions. To do so, we sought to map the ways in which the actors interacting in a social media mobilized the concept of conspiracy theories in the feuds about the flat-earth movement. The methods used in this process were detailed in the next section.

III. Methodology

The methods of this current research were established in the Map of Controversies (MC) approach (VENTURINI, 2010; 2012; VENTURINI; MUNK, 2021). This approach originated from cartographic methods introduced by Bruno Latour at *École de Mines* of Paris, being initially proposed as a didactic exercise of Actor-Network Theory (ANT) to the tracking of sociotechnical disputes (a type of 'cool' version of ANT). Its practical exercise is centered in a corollary: just observe and describe controversies in action. However, 'just' observing and describing does not mean renouncing any theoretical influence nor implicates the search for neutrality through the observations. In a different matter, his project resides in discontinuing a priori referential, conferring to the analyst the responsibility of being open to various emerging points of view in the field. Following this, he aimed at establishing a particular process of objectification named "second-degree", accomplished through the attribution of representations compatible with the position and relevance of the actor in a controversy (which does not mean granting equal weighting to all participants' perspectives).

With the analytical possibilities of using cartographic procedures to follow up emerging controversies in digital spaces, this approach got closer to perspectives engaged in apprehending the social materiality raised by platforms and online media, such as the Digital Methods (DM) initiatives. Guided by the central argument that "virtual interactions supplement rather than substitute for the "real," and stimulate more real interaction, as opposed to isolation and desolation" (ROGERS, 2013, p. 20), the conjunction of social cartographies and digital methods meant, then, a possibility to take further some methods called quali-quantitative, understood as procedures that are "flexible enough to follow *some* social phenomena along each of their folds" (VENTURINI; LATOUR, 2009, p. 07). It did not implicate in an expectation of englobing the totality of the social, but to explore certain nuances of its constitution through methods that involve as much as the examination of the process to which the scientifical objectivity can be produced as for a critical position in the face of orthodox and positive methodologies.

Beyond these influences, the procedures around Controversy Mapping can be undertaken as a result of the ethnomethodological influences of ANT, from the moment in which it advocates experiencing, inquiring, and examining the traces left by social actors; and of a material semiotics aimed at analyzing the practical unfolding of the object's actions. Of a semiotic aspect, two operations become fundamental: identifying the entities – humans and non-humans – that constitute the collective phenomenon investigated; and organizing the elements gathered according to the role played (VENTURINI; MUNK, 2021).

In this semiologic approach, Venturini and Munk (2021) suggested a series of procedures to dissect the programs of action of a controversy. The fundamental components to be identified are: a) the senders, which means, the actors that try to mobilize others to act in a way to produce a performance; b) the subjects, that boost the actions; c) the objects, that is, those that bear with the consequences of the actions; d) the helpers, being the entities that help the subjects to acquire the competencies; e) the opponents, that try to deflect the subjects from their performances; f) and the receiver, who sanctions the accomplishment of the actions involved. It is important to mention that not all programs of action will mobilize all of these elements and some of them might perform more than one role in a dispute (a subject might place themself as the sender of actions in occasions which they produce and mediate a feud). This type of differentiation gains importance by demonstrating that the actions in a controversy are never isolated, involving a range of network-actors performing multiple agencies.

We support ourselves on these routes with the intention of mapping the net of relationships emerging in controversies about Earth's flatness and conspiracy theories on Facebook, exploring the mobilizing ways of these concepts by the actors involved, and, still, delimiting the actors and their roles throughout these discussions. These procedures were based on an ANT fundamental corollary, according to which it "does not consider its function of stabilizing the social in the name of people who study it: this is the duty of the 'actors themselves'" (LATOUR, 2012, p. 54). The analytical design carried out to proceed with such procedures was presented below.

III.1 Analytical Design

To fulfill the desired objectives, we based ourselves on data obtained with Crowdtangle. This is a Facebook platform used to obtain and analyze social media data, that allows the follow-up of events in real-time, the customization of searches, and the acquisition of data in Comma Separated Values (CSV) format. Through this, it was possible obtaining data from Facebook posts that mentioned Conspiracy Theories and the Flat-Earth movement, in addition to accessing content and metrics such as the text of post messages, memes and images, number of interactions, reactions, etc.

In the field of research of this platform, we searched for Facebook publication data from the following syntax: (flat-earth movement, flat Earth) AND (conspiracy, conspiracy theories, conspiratorial theories). This way, we prioritized the results of publications jointly mentioning conspiracy theories and flat-earth movement, aiming to analyze how the discussion in this scope occurred. We selected the search in public groups only, considering results from status messages, images, and Facebook videos shared in these places between January 1st, 2020, and December 31st, 2021.

To demonstrate the network-actors, we produced two types of representation. First, we elaborated a graph from the relation of sharing of common links between Facebook

groups. In this aspect, we seek to evidence who were the actors boosting or intermediating actions in a discussion about flat-earth movement and conspiracy. Moreover, we produced a diagram containing the action program for these disputes, from which we sought to analyze the tone of allegations and the roles played. We discuss such results in sequence.

IV. Results and discussions

At first, we would like to present a summary of the data. The analytical corpus was made of 254 posts[2] from 215 different Facebook groups. The peak of calculated interactions occurred on January 1st, 2021 (n = 547), in which the post with the most interactions (n = 465) was replicated in the *Via Láctea e Além* (Milky Way and beyond) group mentioning a relationship between religious fundamentalism and conspiracy theories. The median of calculated interactions was 9, pointing out the concentration of interactions (likes, sharing, and reactions) in this range of data. Generally, the boost of actions of other users came from diverse situations. For instance, in the group *Novos Escritores Brasileiros* (New Brazilian Writers), the promotion of a poem and prose contest in which the theme of the month was "conspiracy theories" agitated interactions of people reacting or looking for information. Yet, a post in the group *CRIACIONISMO BRASIL – Terra Plana, Tecnologia e história do mundo antigo* (BRAZIL CRIATIONISM – Flat Earth, Technology, and the history of the ancient world) celebrated the news in the portal about the ascension of the hypothesis of Earth's flatness on YouTube. On other occasions, the mentions of the topic occurred as part of an internal posts' dynamics, not emerging from particular events.

In Figure 1, we present the main Facebook groups involved in discussions about the flat-earth movement and conspiracy theories. We based on the sharing data of links in common, noting the convergence of clusters regarding certain topics, such as right-wing agenda promoting distrust regarding events related to COVID-19 (cluster 1); scientific promotion, education, entertainment, and general topics aimed at defending scientific agendas and attacking conspiracy theories (clusters 2 and 5); publications about the association of certain artists – as Post Malone and Chris Brown – with conspiracy theories (clusters 3 and 4); anti-corruption topics, above all related to the former judge Sergio Moro, criticizing emerging conspiracy narratives throughout COVID-19 pandemic (cluster 6); progressive topics in defense to scientific agenda, as well as criticizing emerging conspiracy narratives throughout the pandemic (cluster 7); defense of Earth's flatness hypothesis (cluster 8). Other clusters reproduced similar trends.

[2] The organized corpus was displayed in a spreadsheet in the appendix of this publication.

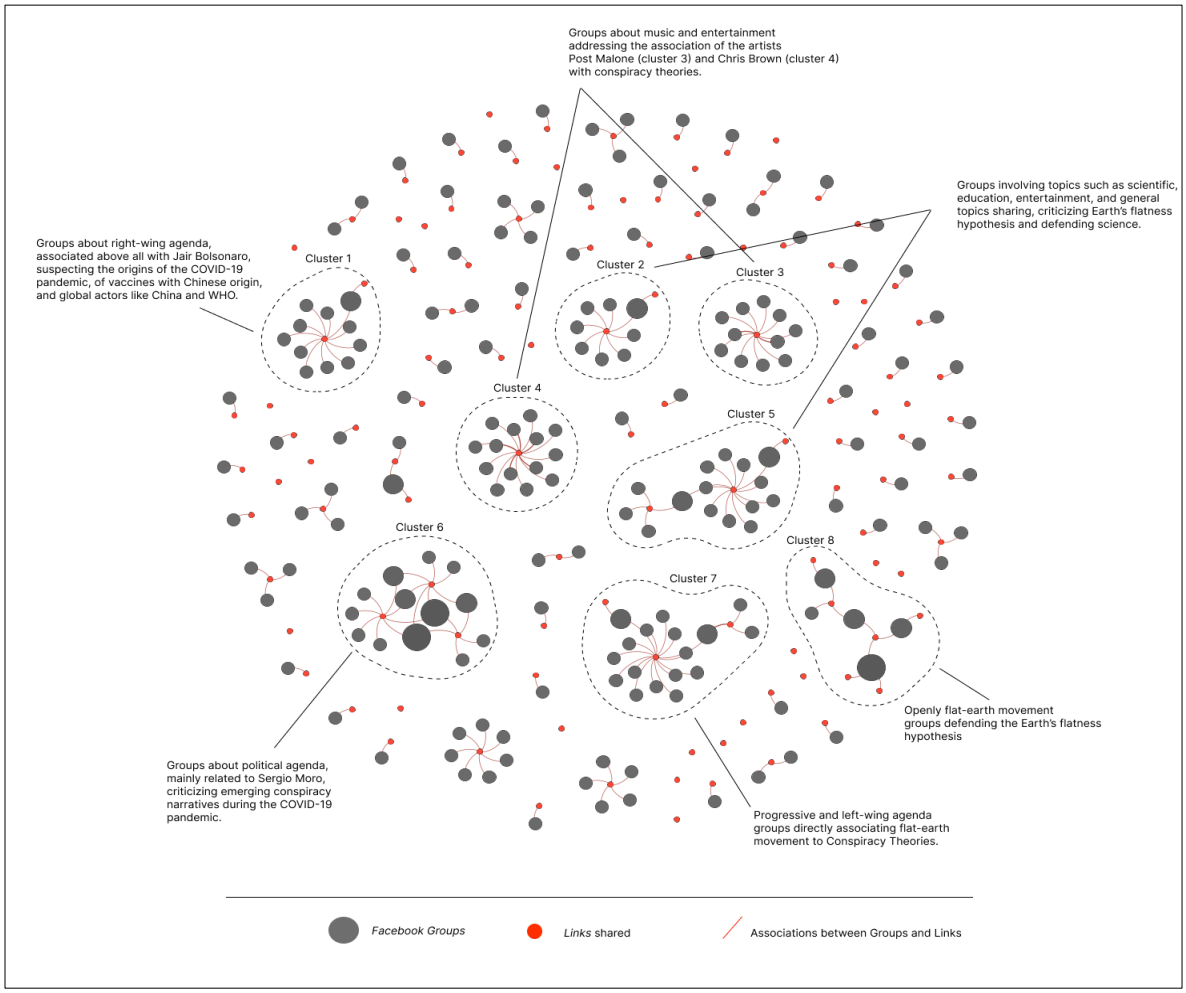

Fig. 1: representative graph of the network sharing of links among Facebook groups mentioning the Flat-earth movement and Conspiracy Theories.

Source: Crowdtangle data.

From the identification of these clusters, we followed the semiologic analysis techniques presented by Venturini and Munk (2021) in a way to produce an act of controversy program (Figure 2). We did it due to the reading of descriptions and content of posts with more than 5 interactions in their corpus (n = 80), subdividing each component according to the actions played by the actors. From these parameters, we marked the presence of 5 main roles among actors: a) senders, as being the profiles themselves searching to mobilize their considerations about flat-earth movement and conspiracy theories; b) subjects, constituted by actors that shared or replicated the posts; c) objects, constituted by the concepts of the flat-earth movement, conspiracy theories, and other emerging topics of interest; d) assistant actors, constituted above all by the Facebook's architecture in the form of groups and links, despite biblical scriptures in the case of flat-earthers' actions; e) opponents, being the rival actors attacked in the content of the posts.

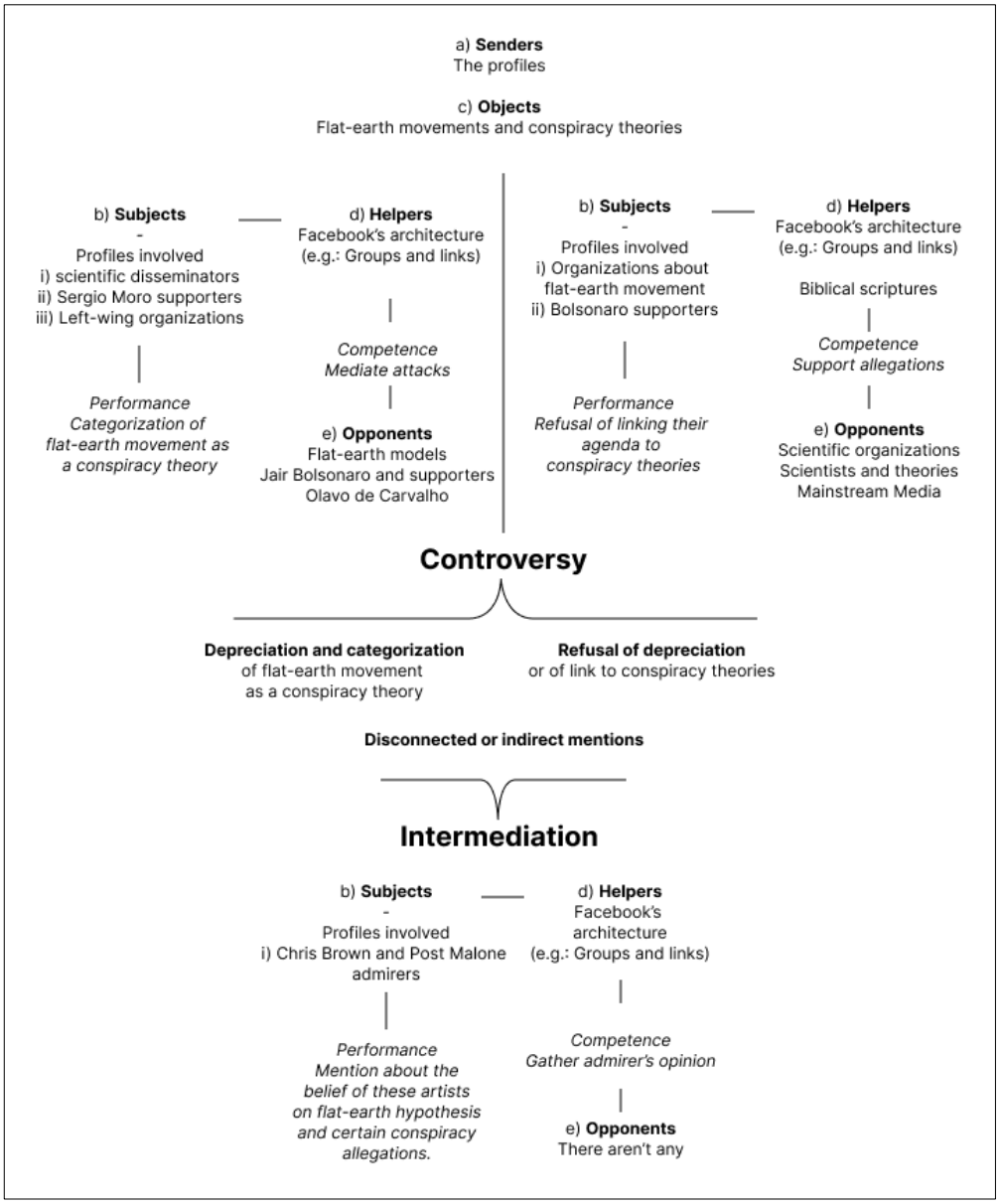

Fig. 2: Program representation of the act of discussions about flat-earth movement and conspiracy theories.

Source: Crowdtangle data. Produced with Figma.

These procedures allowed us to mark 3 types of fundamental actions performed by subjects: i) depreciation and categorization of the flat-earth movement as an example of conspiracy theory; ii) refusal of this categorization; iii) disconnected or indirect mentions. Next, we present some quotes extracted from posts and their comments that allowed us to corroborate their usages. We translated all the mentions extracted; we also highlighted them in italic as a way to differentiate them from academic quotations.

Regarding indirect mentions (iii), they derived from groups involving admirers or entertainment pages mentioning the singers Chris Brown and Post Malone (Chris Brown/MR.

BREEZY; CHRIS BROWN FAME; Chris Brown (Indigo)). Some considerations mentioned news or allegations about these artists supporting the Earth flatness hypothesis: "Chris Brown shook his fanbase by sharing savage conspiracy theories […] he joked at the time, suggesting that he believes in a flat-Earth theory". Others associated these artists with other conspiracy rumors: "Post Malone said he had already had contact with UFOs, ghosts, demons, and cursed objects. […] From theories that the Earth is flat to the speculation that public figures are secret Illuminati members". However, this type of mention did not involve active actions in the face of the association between the flat-earth movement and conspiracy theories, operating on what Bruno Latour (2012) called as intermediate agencies, that is, the act of transporting meanings without directly or indirectly transform a determined course of action. It means that the actions in these quotations only mention about alleged associations of both artists with something that is already stabilized (namely, the relationship between the flat-earth movement and conspiracy theories).

On the contrary, other two types of allegations (i and ii) involved mediating actions of the relationship between the flat-earth movement and conspiracy theories, actively modifying or producing meanings. We present and discuss about some of these uses in the following subsections.

IV.1 Depreciation of the flat-earth movement and its categorization as conspiracy theory

By analyzing the publications organized in the corpus, we noted that acts of depreciation of flat-earther theses, as well as their association with conspiracy theories, derived from three main groups: i) Scientific promotion groups, such as Enigmas do Universo (Universe Enigmas); Astronomia, Astrofísica & Cosmologia (Astronomy, Astrophysics & Cosmology); *Divulgação Científica e Popularização da Ciência (*Scientific promotion and Science Popularization); etc.; ii) former judge Sérgio Moro supporters groups: MORO - RESISTÊNCIA CONTRA O SISTEMA! (MORO – RESISTANCE AGAINST THE SYSTEM!); MORO – 2026 – BRASIL COM ELE (MORO – 2026 – BRAZIL WITH HIM); SÉRGIO MORO, NOSSO SENADOR! (SÉRGIO MORO, OUR SENATOR!); iii) and progressive groups and opposers to former president Jair Bolsonaro: Progressistas do ABC (Progressists from ABC), Ativistas PT[3] São Paulo (São Paulo PT Activists), LULA LÁ BRILHA UMA ESTRELA (LULA THERE, A STAR SHINES).

In these cases, the acts of depreciation undertook a double movement. On one side, certain mentions, above all linked to scientific promotion groups (i), attacked flat-earth movement's theses directly associating them to the class of aberrant conspiracy theories for containing epistemic downgrades in their hypotheses. Beyond that, some quotations, mainly the ones involving political matters (ii and iii), associated the flat-earth movement with

3 PT or *Partido dos Trabalhadores* stands for Workers' Party, a centre-left wing political party in Brazil.

conspiracy to the extent of attacking supporters and agendas associated with former president Jair Bolsonaro.

In the first case, certain mentions led to discussions addressing the flat-earth movement as a conspiracy theory per se: "*The studies about the flat-earthers and other conspiracy theories indicate that they believe they are the ones who act with logic and scientific thinking*". Moreover, some of them denoted the characteristics in flat-earther's discourse that would make it a conspiracy theory, as for the thesis that "*THE EARTH IS FLAT and the astronomies lie to the world population*". Others expressed a differentiation of flat-earth movement in relation to other conspiracy theses: "*Some conspiracies are harmless (the flat-earthers, the ancient astronauts' theorists), but is due to the 'anti-vax' that measles and polio – almost eradicated – are returning*". Moreover, some arguments corroborate to the depreciative aspect of these theorizations: "*Each time, more people get interested less in Science and more in absurd, aberrant, and limiting conspiracy theories. As the flat-earth movement, for example*". The recurrence of depreciative mentions in scientific promotion groups shows itself as part of a process of establishing boundaries, from which their inside members make it clear the impertinence of conspiracies considered theses: "*Conspiracy theories of the kind 'the men haven't gone to the moon', 'flat earth', and others will not be tolerated*".

In academic spaces, this border work is usually undertaken with the purpose of defending, legitimating, or maintaining the prominent position of scientific contributions, above all in times which the borders in relation to other intellectual activities do not present themselves – even if artificially – established (HARAMBAM; AUPERS, 2015). In the scope of conspiracy theories, once the actions involved use to come filled with frontal distrust to scientific truth and many contestations of its products, this search for differentiation consolidated itself as part of an action seeking to sustain a superiority of the scientific knowledge character, making the eventual divergent subjects cognitively questionable or social unstable.

Regarding data from a social media, this result indicated a reproduction of certain socio-technique dynamics characteristics of the scientific activity in these spaces, as the regimentation of converging allies around scientific theses or the cleavage in relation to discordant subjects, making them isolated or deprived of logics (LATOUR, 2011). From this aspect, actors linked to scientific promotion assumed active roles in this border work, an action evident by the ways some of them addressed themselves to flat-earth movement and conspiracy theories as a form of threat: "*([I] saw the spread of concerns with no foundation and of absurd conspiracy theories, it is fertilized the terrain for offenses to science, to education, to culture, and to arts"*.

This situation was empirically evidenced in other works demonstrating that "the aggregation of users around conflicting narratives lead to the emergence of echo chambers" (BESSI et al., 2016, p. 04). These would be polarized groups from which their users internally

share the same worldview. As demonstrated, the establishment of these homogenous groups tends to be independent of the social media being investigated and of algorithm action, being a function of content allegation in dispute. Moreover, engaged groups in scientific bubbles have shown themselves as prone to overflowing their boundaries with the purpose of attacking theses considered a conspiracy.

This is an indication of how Facebook architectures have contributed to this situation by allowing the accommodation of profiles in closed groupings, as well as the transit between rival publics. In the present corpus, it became explicit when a subject, opposer to flat-earth movement hypotheses, posted the following teasing in the flat-earthers group: "*Why don't any of you try to start a company to try proving that the earth is flat?*". To corroborate this question, the post argued for the search for proof being more effective than keep acting "*like idiots only posting stuff [they] found on the internet and in their little groups filled of dumb elderlies with no study that only know posting conspiracy theories that make any sense?*". Another case at this level happened when a subject argues about the lack of evidence for the Earth flatness hypothesis in a specific group: "*Today, no flat-earther holds proofs of what they believe, precisely because everything is not but lack of knowledge and faith in believing in conspiracy theories*".

On one side, it is notorious the social media contributions to the spread of scientific knowledge in spaces that Fleck (2010) named as exoteric circles, constituted by the gathering of lay or not specialized person in the dynamics of discussing science subjects. In this aspect, the promotion of scientific content in social media can be understood as an additional and singular form of amplifying discussions about science, technology, and society. On the other side, considering the action of certain non-human actors, such as architectures that facilitate the polarization of discussions or algorithms that contribute to the spread of disagreements, it is necessary to increase the discussions about potential agencies of promotion or fact checkers that, instead of rejecting conspiracy theories considered pernicious, can make them public. This becomes urgent mainly because many of these profiles or groups have a relevant mediatic impact on Facebook, having thousands of followers (the group "*Scientific promotion and Science Popularization" registered more than 45 thousand participants. The group "Universe Enigmas" gathered more than 151 thousand. Data from the first semester of 2023).

On what refers to cases involving political matters, a peculiar circumstance was noted. In this scope, mentions about flat-earth movement and conspiracy theories directly and frequently involved mentions to the former Brazilian president Jair Bolsonaro and his supporters. This became evident in progressive groups' posts describing what they called as bolsonarism virus: "*He makes people lose their minds, to hate and despise teachers, scientists, and culture, and to believe in foolish theories, as the 'Chinese virus', the 'flat-Earth', the 'little flu', and the 'communist conspiracy'*". Or in critical positionings to the bolsonarist electorate: "*When we think about conspiracy theories in general, there are some*

questions that Bolsonaro's voters place themselves in even greater volumes than the rest of the electorate". Furthermore, it is also present the mentions of some former judge Sérgio Moro supporters, at the time of the publication, a dissident of Bolsonaro's government: "*Thus, in different degrees, we see simplistic explanations of the reality thriving, as the theories that spread the flat earth [...] or, finally, that there is a huge conspiration to fraud the next elections to the disadvantage of Bolsonaro*".

A central actor in the movement associating bolsonarism to the flat-earth movement was the writer Olavo de Carvalho. As discussed by Martins (2020), Olavo became famous for several dubious statements about the flat Earth hypothesis, despite having never declared himself as a convinced flat-earther.

Still, these quotations equipped his opposers, that started characterizing him as: "*Regarding Olavo de Carvalho, it is even pathetic to talk about it, because among so many other bizarre things, he said that the Covid-19 pandemic does not exist and is a supporter to the thesis of the flat earth*". In some cases, the association was broadly extended to other scientific denialism phenomena: "*The anti-vax movement has plenty of flat-earthism (also supported by Olavo de Carvalho, even if with less vehemence). They are a movement that denies what does not need to be proven anymore"*. This way when they sought to attack Olavo de Carvalho and the bolsonarism, the subjects almost automatically associated them with flat-earthism and, consequently, with conspiracy theories.

This movement marked a shift in the concept of conspiracy theories into a depreciative category. We talk about category in the sense of a priori and universal form of thinking and acting, or even, a class which certain ideas can be included in logical terms (PEIRCE, 1992; SANTAELLA, 1999). Thus, by working as a receptive class of diverse negationist dynamics, as flat-earthism, vaccine distrust, disbelief of men's being on the moon, or other disbeliefs about the origin of the COVID-19 pandemic, the use of the concept conspiracy theories was established around a pernicious interpretation, corroborating to Napolitano and Reuter (2021) collocations regarding its dense evaluative character, that is, to the fact that its conception has become inherently negative. In this case, saying that a determined allegation is a conspiracy theory does not implicate in just considering it a bad theory, but also in assuming it as epistemically invalid.

So, if there is almost a consent in media, academia, and popular imagination about flat-earthism being a conspiracy movement for constantly contesting scientific evidence with a basis in attacks on institutions or researchers (ALBUQUERQUE; QUINAN, 2019) when the discussions involved political controversies, the relation flat-earth/conspiracy started being also connected to bolsonarism. This occurrence denoted a singularity in the depreciative character of conspiracy theories because it grounded its use as an instrument to attack or stigmatize rival groups in other social instances, such as the political debates.

We are not judging the motivations that led to these procedures, because the social actors are in great part responsible for their own ways of existing in the world (LATOUR,

2012). Our argument resides more in pondering that these uses might unfold into circumstances such as the transformations of conspiracy theories into a social stigma, once, from their subjects' perspective, "publicly espousing conspiratorial claims renders them the object of negative evaluations and behaviors from others" (LANTIAN et al., 2018, p. 948). More specifically, they can lead to a loss of reference in relation to conspiracy causes in a broader cultural scope, once we would get used to considering certain narratives or groups as conspiracy almost as definition, without paying attention to their probable causes or motivations (HARAMBAM, 2021). This can make the use of this expression indeed automatic and barely critical, besides transforming the people involved in easy rhetorical targets. In fact, these factors were corroborated by results demonstrating the application of conspiracy theories concepts in counter-argument situations.

IV.2 Refusal of association to conspiracy theories

As we pointed out in the act of controversy program Figure 2, the movements of refusal of association to conspiracy theories occurred from two groups: i) the flat-earthers, in situations they counter-attacked the delegitimization moved by promoters and the ones interested in scientific topics; ii) the bolsonarists, that refused being labeled as conspiracy theorists.

In the first case (flat-earthers), these procedures occurred in situations that affirmed their hypotheses: "*The flat earth is the mother of all conspiracy theories???? Not at all, the flat earth is a fact not a theory!*" In another case, a profile quoted 31 alleged common behaviors of what was named as *globista* ('globists', which means, those who follow the scientific consensus about Earth's geoid model), listing: "*If [you] tell the truth [they] start saying: conspiracy theorist*". Another example at this level occurred when a subject posted the following reply to an opposer publication associating the flat-earth movement with pseudoscience: "*On the contrary, our science is empirical! U there keep the pseudo? U travel in spaceships at the speed of light! lololol*". Another reply to this post reminded the flat-earthers' interpretations of ancient people as a defense strategy: "*wow, so all ancient people were all conspiracy theorists that's it*". In short, quotes like these express that the subjects engaged in the Earth's flatness hypotheses consider their theses as empirical facts that emerged from a science presumably truthful, that is, the flat-earth movement.

These results follow the discussions about the named "conspiracy theorist" to show an ambiguous attitude towards Sciences, once they do not intend to renege it entirely, but indeed to purify it to build a scientific process with inductive characteristics, based above all on sensorial experience as a fundamental criterion (HARAMBAM; AUPERS, 2015; MARTINS, 2020). Moreover, they reinforce theses about the attribution of the label "conspiracy theorist" not necessarily diminish the support for conspiracy allegations. In fact, in some cases, the labels can even intensify the support of certain distrusts, once the targeted subject might question themself if the attacks coming from rival groups do not mean the

success of their endeavors (WOOD, 2016). In the corpus, it was marked from quotations which flat-earthers subjects responded to certain accusations from opposers: "*For now u don't have globist's arguments [you] think that by attacking flat-earthers you're lucky. Hey the earth is flat!*"; "*If u are [a] convicted flat-earther like I am! [You] shouldn't take into consideration insinuations! It is notorious the mental unbalance of some globists beings!*"

Going further than a passive reaction, examples like these corroborate works demonstrating the mockery tone assumed by subjects engaged in the Earth's flatness hypothesis as part of an active strategy of defense in the face of attempts of depreciation (MARTINS, 2020). Hence, by treating their opponents with mockery, they not just reacted against accusations, but also strengthen their internal theses from a group behavior. By acting this way, they gather forces as a way to resist to the social stigma related to the "conspiracy theorist" label, starting to openly challenge the authority of institutions, researchers, and modern Science (HARAMBAM; AUPERS, 2017). They act, in a way, as an opponent cultural expression, once its supporters not only search for different ways of living that do not englobe the scientific consensus on Earth's roundness, but they show themselves convinced about the possibility of changing the society, the Science, and own culture from this worldview (WILLIAMS, 2011).

Particularly analyzing, these results are also evidence of how the label of a conspirator is not a priori given, being a product of daily situations in which the social actors tend to dispute the circumstances of its use. This consideration is sustained in the discussion by Bruno Latour (2011) about the process of groups and anti-groups formation: "every time some work is needed to trace or retrace the boundaries or a group, other groupings are classified as empty, archaic, dangerous, obsolete, etc" (p. 56). Comprehending the basis of these practices becomes, then, fundamental to the understanding of emerging epistemologies around the scientific promotion in digital spaces, that tend to reproduce particular forms of actions about Science that should not be considered neutral or impartial in terms of knowledge politics.

From this aspect, instead of an inherent quality to a narrative or subject, a conspiracy theory can be understood as the result of an event from which its use starts being negotiated by the actors involved in a proper terrain for this situation. We talk as an event by basing on Whitehead's (1994) conception, as an occurrence that prolongs throughout time and space, being the result of a conjunction of other possible constituting events. It can be framed as events daily occurrences, like a rainy day, or even a techno-scientific event, such as the production of the inclined plane by Galileo Galilei, who established an experimental basis for the development of modern science. Following this, if the scientific truth itself can be approached as a historical event of scientific thinking more than a quality from a determined assumption (FLECK, 2010; LATOUR, 2012), so, it becomes productive considering a conspiracy theory also under the sign of an event, once its depreciative character, commonly linked to the falseness of certain allegations, it is not a priori given, being the result of several

socio-technical procedures, from the checking of the information involved to the qualification of groups as "conspirators".

In what refers to the case of publications associated to bolsonarism (ii), the altercations were motivated mainly by distrust regarding the COVID-19 pandemic. Posts mentioning this topic were used in certain groups: "*[...] there are stories that sound too fantastic to be true, but that becomes weirder each explanation, even with efforts made to mock them. The Covid-19 'pandemedia*[4]*' is one of those, the more you touch it, the more it stinks*". In this example, the refusal of conspiracy theorist label occurred as a way of ratifying these distrusts: "*Honestly, I'd like to have the innocence or the debility of who looks at all this scenario and believe it to be just a 'conspiracy theory"*".

However, this type of politicized mention was not restricted to bolsonarist groups, extending to those engaged in earth flatness. A post from the group *Teorias da Conspiração Nossa Amada Terra plana* (Conspiracy Theories Our Beloved Flat Earth) warned about the emphasis of this space: "*warning 'this group supports the president Bolsonaro if you do not agree, there are other groups"*". In the same post, when pointing to the veracity of several conspiracy theories, it was mentioned: "*these Theories make us think and with it [we] start being awakened about the possibilities of manipulation that our Governs and the mafia of industries do on us*". This being, if subjects opposed to Jair showed a tendency to associate bolsonarism to the flat-earth movement and, consequently, to conspiracy, the former president's supporters saw themselves facing a dilemma: to refuse the label of conspiracy theorists at the same time they searched for nurturing conspiracy allegations regarding COVID-19 pandemic.

Nonetheless, it would be reductionism restricting to these subjects the quality of "conspiracy theorists" once the engagement around conspiracy allegations in the corpus demonstrated being not exclusively theirs. To reinforce this consideration, we quote a post published in the groups *BRASIL CONTRA BOLSONARO / GOLPE E DITATURA MILITAR* (BRAZIL AGAINST BOLSONARO/COUP AND MILITARY DICTATORSHIP), an openly anti-bolsonarist space: "*[I] know that some of the information that [I] have to present to you will seem more like some conspiracy theories that go through media*". In the content of this post, besides attacks on Bolsonaro – "*did it ever occur in your rational and educated mind, that one day Brazil would have a "weakened Hitler" blowing everything in your country*? – certain mentions brought sentences typical from the ones engaged in conspiracy theories: "*the time for the truth has arrived*", or "*it's time to start changing your concepts and reconsider your way of seeing reality*".

This case demonstrated how certain characteristics of the reality of conspiracy theories – such as claiming the existence of secret plots or assuming alternative ways of observing reality – are not limited to certain groups or subjects. When we automate this, we

[4] Pandemedia comes from the combination of the terms pandemic+media.

skip the gap that allows us to describe the production conditions of a conspiracy theory, transforming its use into a habit, once we smooth discontinued processes through which we realize certain actions (JAMES, 2004; LATOUR 2019). This way, we do not handle that, for example, the flat-earthers' allegations contain broader foundations than the simple dependency of conspiracy allegations, with its cosmologic basis in literal interpretation from the book of Genesis. It does not mean, however, that flat-earthers do not act in a conspiracy way when they suspect a world plot aiming at hiding the supposed truth of flat Earth. The point is that the simple distrust of these subjects would not be enough to explain the rooted categorization of the flat-earth movement as a conspiracy theory while distrustful initiatives – as the emerging ones in progressist groups in relation to Bolsonaro – do not have the same goal. In short, it seems that there are a range of paths operating between daily distrust and deep conspiracy theories, that are disguised due to the habit of immediately categorizing certain allegations as conspiracy.

It is on this issue that the concept of event gains productivity, once, without a conspiracy essence to be rescued, the conceptual establishment of conspiracy theories can be considered the outcome of an occurrence related to the agencies involved. This event can confront both those actors engaged in plot allegations (flat-earthers, bolsonarists, anti-vaxxers, progressists, or any subjects distrusting the occurrence of conspiracies) as subjects experimenters of these allegations that were capable of producing meanings about its existence (scientific promoters, researchers, journalists, or social media users), without mentioning the social terrain co-responsible for the distribution of these feuds (Facebook groups, YouTube videos, news, etc.). In this network of events, an actor that belongs to the second group (producers of meaning) can become an actor of the first group (plot allegations) when the circumstances change (as in almost-conspiracy mentions of a subject critical to bolsonarism). Likewise, a Facebook group can become a relevant actor when mediating the confront of opposed subjects, to the extent that it will just intermediate agencies if the disputes have stopped. This would not change the dynamic of events, once there are no essences at stake, but just agencies distributed in a concrete whole.

V. Conclusions

We verified two major ways of associating the flat-earth movement's concepts and conspiracy theories: i) one from actions depreciating the flat-earth movement and other social dynamics, categorizing them as illogical conspiracy theories; ii) and another from actions aiming at reacting in the face of this categorization. In the first case, the actions involved groups of scientific promotion, as well as the ones engaged in political discussions, above all opposers to Jair Bolsonaro, who transformed conspiracy theories into a depreciative category to englobe several negationist dynamics, as the distrust about COVID-19 pandemic and the flat-earth movement itself. In the second case, they mediated actions of openly flat-earther

actors and some bolsonarists, in independent moves, but, in some cases, convergent about the distrusts, as the ones involving the pandemic.

For this matter, these controversies showed themselves directly connected to Brazilian political disputes, creating a scenario in which the flat-earth movement and conspiracy were linked to bolsonarism almost by definition. In the case of conspiracy theories, it is probably due to the engagement of Jair Bolsonaro and his supporters around the allegations of conspiracy throughout the pandemic, as for the distrusts regarding the vaccines, the origin of SARS-CoV-2, the use of masks, and social distancing (KALIL, 2021). On what refers to the flat-earth movement, our hypothesis is that some of the dubious mentions from the writer Olavo de Carvalho about the Earth's flatness hypotheses might have provided to opposers the association, together with bolsonarism supporters, of the flat-earth movement as a way to stigmatize them.

This circumstance expressed as a conceptual establishment of conspiracy theories cannot be separated from the controversial situation from which they emerge, being more than just an inherent quality of certain narratives or subjects, a product of events located in a time and space. In these events, actions can be netted as: conspiracy allegations from distrusted groups; the categorization of these allegations as examples of conspiracy theories; the algorithm or social media architecture action in spreading content, etc. This type of description can help the comprehension of why certain daily distrusts do not root as conspiracy theories per se to the extent that narratives, such as the flat-earth movement ones, receive media form on a daily basis as an aberrant conspiracy phenomenon. Between the two extremes – radical conspiracy and conspiracy allegations – it seems that there are multiple layers that explain these distinctions, but that we lost sight of due to the automation of these categorizing procedures.

In other words, we would like to warn about the transformation of the categorization of groups and subjects as conspiracy theorists into a habit (JAMES, 2004; LATOUR, 2019). Just as we get used to performing certain functions automatically, we also get used to cataloging some discourses – as the flat-earthers ones – as examples of conspiracy theories almost by definition, extending, even, to situations in which this action becomes a political struggle tool (as in the depreciative association of bolsonarists groups to the flat-earth movement). With this, we do not want to deny the potential conspiracy nature of many allegations about Earth's flatness, or Jair Bolsonaro's conspiracy actions throughout the COVID-19 pandemic, but just not lost sight of their conditions of production. Even though these attitudes might be efficient in a broader communicational context, we think that they can become little critical and indeed stigmatizing when it is about scientific promotion and communication, because they give to certain groups a priori (dis)qualification not necessarily evident.

Widely, we would like to get closer to initiatives that advocate the forms of production and distribution of techno-scientific knowledge instead of taking them as part of

an obvious reality to be assimilated in an educational situation. In doing so, we gather conditions to conceive the fact that the very approximately geoid shape of the Earth is not all trivial, once it derives from a material, empirical, and moral issue. This involves the formulation of studies and models to measure with certain trust Earth's circumference; an exploratory action (it might be said in both ways) of subjects as Ferdinand Magellan and Juan Sebastián Elcano to confirm to their contemporaries the spherical image of Earth already theoretically known; and the acceptance of their results and its transformation into a fact by a specialized community. To remind Bruno Latour (2020), "the cycle needed to draw any sphere is pragmatic in John Dewey's sense: [we] feel the consequences of its actions before imagining what it truly made and [before] becoming aware of the world content that opposed resistant to them" (LATOUR, 2020, p.).

Thus, more than assuming the triviality of this socially shared result called "globe Earth", a productive motto starts being the comprehension of the cycles from which we broadly and densely draw. With this, a margin is opened to discuss the evidences that sustain an idea, as well as the disputes that make them interesting to distinct groupings. This way, it becomes possible to denaturalize the idea that a scientific fact is an obvious entity, expressing then its articulated character in relation to data, experiments, hypotheses, theories, equipment, experimental methods, and scientists (LIMA, 2019). Moreover, we gathered conditions to describe Science denialist movements as formed entities through the association between distinct actors and agencies, without reducing them to cognitive, social, or cultural deviations.

Limitations of this research are associated to the choice of investigating the relationship between the flat-earth movement and conspiracy in a context uniquely Brazilian, leaving aside other probable unfolded factors in distinct cultural circumstances. We hope that other researches might base themselves on the results here organized aiming to expand the analyses to other formats of scientific denialism, and still, evaluate its occurrence in other languages, countries, and cultures. Here, we argued on the urgency of including in conspiracy and other Science denialist dynamics discussions this pragmatic character of the establishment of the conspiracy theories concept. Even though certain claims corroborate their ambiguities and reinforce their dense evaluative character (BJERG; PRESSKORN-THYGESEN, 2016; NAPOLITANO; REUTER, 2021), the present results of this research demonstrate how social actors established their own conceptions about conspiracy theories, favorably using them for their desires, even in the absence of a theoretical reference. Thus, we evaluate that conspiracy theories have been consolidated in a media way as fluid, established, and constantly stabilized, in the course of collective practices.

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