

Netnography of Women's Cyberactivism Against Environmental Denialism on Instagram

Cibele Dametto, Jordi Bonet-Marti

Recommended Citation:

Dametto, Cibele; Bonet-Marti, Jordi (2024). "Netnography of Women's Cyberactivism Against Environmental Denialism on Instagram". *Profesional de la información*, v. 33, n. 1, e330011.
<https://doi.org/10.3145/epi.2024.0011>

Article received on September 8th 2023
Approved on December 28th 2023



Cibele Dametto

<https://orcid.org/0009-0006-6389-8366>

Universitat de Barcelona
Facultat d'Economia i Empresa
Departament de Sociologia
Av. Diagonal, 696
08034 Barcelona, Spain
cdametda26@alumnes.ub.edu



Jordi Bonet-Marti

<https://orcid.org/0000-0002-8863-3202>

Universitat de Barcelona
Facultat d'Economia i Empresa
Departament de Sociologia
Av. Diagonal, 696
08034 Barcelona, Spain
jordi.bonet@ub.edu

Abstract

This article aims to give an account of the digital narratives used by women activists to counter environmental denialism during the 2022 election period in Brazil. There is still little research that addresses the topic, especially through women's lenses on a specific timeframe, such as elections. The article is based on a netnography of the publications on Instagram during the months of August and September 2022, to identify the strategies used by women cyberactivists to counter environmental denialism through their digital narratives. Data were gathered through desk research and non-participatory observation, incorporating specific inclusive criteria, and the netnography process involved a thematic analysis supported by Atlas TI. The study is constrained by limitations in the netnography method, such as ethical considerations necessitating anonymized data from a sample mostly consisting of verified accounts and the limited access to cyberactivists' demographic information. We have identified 5 main strategies from the carried out analysis: Value's Expression, Emotional Expression, Reasoned Arguments, Collective Action, and Community Building, which was framed in the dimensions Individual, Collective, Subjective and Objective, create meaning through generating identification, action, sense of belonging and creating awareness and movement. The creation and envisioning of new realities happen in the dialogue between the Cyberactivists and their followers, and the success of their activism relies on their capacity of reaching and affecting their followers through their strategies, generating meaning.

Keywords

Cyberactivism, Environmental Activism, Women Activism, Environmental Denialism, Digital Narratives, Netnography, Brazil, Intersectionality, Instagram, Polarization.

1. Introduction

The primary purpose of this investigation is to identify how women's cyberactivist narratives operate in the context of environmental activism against environmental denialism in Brazil. Online activism has been recently approached, mainly from a male North American perspective, but not well developed in a Latin American context. Also, there is an



opportunity to analyze and integrate the 3 dimensions (digital narratives, cyberactivism, and environmental denialism), from the perspective of women's interaction with the environment and social media.

On one hand, the Brazilian context has shown that Brazil is one of the worst countries to be an activist in the world (**Global Witness**, 2020), with 24 murders of land and environmental defenders in Brazil in 2019. Marielle Franco, a black woman activist for social minorities was murdered in 2018 while serving in the legislature in favor of the social minorities she represented on the political scene (**Fernandes; de Oliveira; dos Santos Junior**, 2020). Also, to reinforce this tendency, on the eve of the second round of the presidential election in 2018, then-candidate Jair Bolsonaro stated that he would put "an end" to all activism in the country (**Band Jornalismo**, 2018).

On the other hand, climate denialism has been increasing in Brazil, especially during the election period. It did not appear in Brazil recently but it found in the current political movement new conditions for growth and the exercise of power (**Miguel**, 2022). At the same time, deforestation is increasing in the country: Data released by **INPE** (2019) found an increase of 88% in deforestation in the Amazon compared to June 2018 and 40% in the cumulative total of twelve months.

This context highlights the urgency of action and the relevance of environmental activism in Brazil. The internet and social media has been shown as a space for activists to present their digital narratives while making themselves present in the public sphere. In Brazil, 55.6% of the population uses Instagram, which translates to 119.5 million users (**Kemp**, 2022), presenting it as a powerful vehicle for activists having women as the biggest group of activists (**Torezan**, 2022).

Cyberactivism history has been a subject of study in Brazil (**Nunes**, 2020) and in the world (**Sandoval-Almazan; Ramon Gil-Garcia**, 2014). Previous studies on cyberactivism highlight the variations in digital participation across different national contexts, with factors such as the consumption of digital media, non-electoral political participation, and political efficacy (**González-Lizárraga; Becerra-Traver; Yanez-Diaz**, 2016). One of the articles studied regarding cyberactivism and specific contexts was the political cyberactivism in the last presidential elections in Ecuador (**Vélez-Duarte; Calva-Cabrera; León-Alberca**, 2022), which reflected that political cyberactivism is generated both in a planned way and spontaneously and it makes it possible to modify the public agenda and give space to issues of national interest. Related to this topic cyberactivism is also recognized as a platform for educational processes with significant contribution to global citizenship education (**González-Lizárraga et al.**, 2016). The implications of specific events like elections and cyberactivism deserve to be explored further.

Other findings reveal that cyberactivism creates connective solidarity networks (**Arruda; Medeiros; Kelvis**, 2023), while enhancing social bonds through various strategies like the (dis)identification, collaboration, and creative resistance, besides of facilitating bridging through demonstrations of morality, appeals to humanity, and alignment with other causes, merging the logic of collective and connective action (**Parsloe; Holton**, 2018). Another strategy identified is the adoption of feminist positioning and self-identification by environmentalists on online platforms, recognizing the specificity of women's struggle in the environmental cause and contributing to a dual activism marked by feminist environmentalism (**Nogueira; Câmara**, 2018). Another study connected feelings of injustice and subjective experiences in predicting activism (**Chon; Park**, 2020). Further exploration of their strategies is warranted in this context.

To develop our study, we have relied on netnography, analyzing those publications made on Instagram by women activists in Brazil in the months of August, September, and October, from the formal beginning of the election campaign, until the end of the 2nd round. As an auxiliary tool, Atlas TI will be used for data analysis. The specific research objectives are the following:

1. Identify (mapping) women online activists who are fighting against environmental denialism in social media.
2. Analyze their digital narratives and categorize the strategies that support the expressions of their activism.
3. Analyze how these strategies contribute to the creation of meaning and the construction of reality in their digital narratives.

This study is divided into four parts: first, we present a literature review of Cyberactivism, contextualizing the Environmental Woman perspective and its contribution to the fight against Environmental Denialism; second, the methods used based on Netnography; third, an analysis of the women's digital narratives then we present a discussion of the results and the final conclusions.

The process of systematic review in the platform WOS (Web of Science) was conducted in different phases and combined the main keywords of the study: Cyber Activism; Cyberactivism; Digital Activism; Online Activism, Environmental, Gender, Women, Female and Digital Narratives, with articles published within maximum the last ten (10) years. Regarding the keywords: Cyber Activism OR Cyberactivism OR Digital Activism OR Online Activism as Article titles within the timeframe of 5 years, this first search yielded 319 results, which represents 58,74% of all articles published in the history of the platform. Most of them are in Communication (144 articles), followed by "Sociology" (38) and "Political Science (29). Almost 30% of them were published in the USA, followed by the UK (12,5%) and Spain (10,9%). As we can see in the search process, the term 'Cyberactivism' can have different variations with slightly different meanings. **Nunes** (2020) conducted a literature review about the topic in Brazil and concluded that "ciberativismo" is a usual term in the Brazilian debate, so we will be using this during all the work and conceptualizing it in the following part.

The second approach was more specific, the first round was conducted using first the keywords as (TITLE) Environmental AND (Cyber activism OR Cyberactivism OR Digital Activism OR Online Activism), which yielded 8 results. The second round was conducted using the keywords as (TITLE): (Gender OR Women OR Female) AND (Cyber Activism OR Cyberactivism OR Digital Activism OR Online Activism)), which yielded 38 results. The search was limited to articles published in the last 10 years. Lastly, the third approach used the following keywords as (TOPIC): ((Environmental) AND (Cyber activism OR Cyberactivism OR Digital Activism OR Online Activism) AND (Gender OR Women OR Female)). The search was limited to articles from the last 10 years. This first search yielded 15 results, with a variety of areas as Educational Research, Environmental Sciences, Psychology, and Multidisciplinary Public Environmental Studies.

Recently, cyberactivism has been growing worldwide as an alternative form of manifestation for political and social change

1.1. Cyberactivism

Recently, cyberactivism has been growing worldwide as an alternative form of manifestation for political and social change. Although it is not new, since the 1990s, there have been growing discussions of this kind of activism and how new media have been used by political movements (Best and Kellner, 2001; Couldry and Curran, 2003 cited in **Kahn and Kellner** (2004)). A topic already existent in the academic debate, but overwhelmingly left aside (**Nunes**, 2020). Cyberactivism, as it has come to be known, is considered an important component of the modern activist movement (**Sherer**, 2023), understood as unconventional political actions on the internet and social media (**Fernández-Prados et al.**, 2021).

The history of cyberactivism is intertwined with the evolution of information technologies. **Castells** (2015) brings extensive contributions about the use of social networks as tools for the articulation of members of social movements. According to **Castells** (2015), "Digital social networks offer the possibility for largely unfettered deliberation and coordination of action." Despite similarities and differences in the use of ICTs, **Sandoval-Almazan and Ramon Gil-Garcia** (2014) proposes a framework to understand the evolution of cyberactivism in the world: if in an initial phase we had the online articulation using websites and other internet technologies (cyberactivism 1.0), in a second moment, we had it done using Youtube, Twitter, Facebook, and other social media (cyberactivism 2.0). **Gerbaudo** (2019) also establishes a historical periodization and associates it with the concept of ideology understood as "a worldview and value system which shapes collective action".

Nunes (2020) brings a different, but complementary perspective on the history of the movement in Brazil. According to the author, the country lived 3 different moments of cyberactivism: (1) The emergence of cyberactivism: the web portals (1995–2001), (2) Consolidating of cyberactivism: the blogs (2005–2012), and currently (3) The routinization of cyberactivism: social networks (2013-present). According to **Nunes** (2020), cyberactivism development in Brazil is connected to social, technological, and political history. Despite highlighting some differences in the development of cyberactivism according to its context, both authors (**Sandoval-Almazan; Ramon Gil-Garcia**, 2014; **Nunes**, 2020) link the use of social media with contemporary cyberactivism and its power to transform society.

By social media we understand it as "a group of internet-based applications that build on the ideological and technological foundations of web 2.0 and that allow the creation and exchange of user-generated content" (**Kaplan; Haenlein**, 2010). Regarding the objective of social media, **Ae Chun et al.** (2012) cited in **Sandoval-Almazan and Ramon Gil-Garcia** (2014) define it as a set of tools and systems that allow an organization to achieve these social capabilities. These social capabilities provide referents and groups at hand and in a global world, with which an individual can get involved in the processes of formation of collective identities and local and global causes (**Fernández-Prados et al.**, 2021).

In relation to the power of cyberactivism to transform society, the views differ. Some scholars have criticized it affirming that its role is more related to increasing positive feelings than promoting change, calling it by 'slacktivism' (**Morozov**, 2009) or 'clicktivism' (**Halupka**, 2018). In this view, cyberactivism fails to initiate social movement, which is rejected by **Castells** (2020), who contextualize how social media communication generates movements in the street and the power of new media developments in techno culture to make possible a reconfiguring of politics and culture. **Gerbaudo** (2012) builds a bridge between the two different above-mentioned views, when describing the importance of social media without exaggerating its impacts and considering the human factor. **Pires and Castro** (2020) add that cyberspace is not limited to entertainment and consumption, but rather as a space for political and social engagement and a potent propagation of knowledge. Although there are different views about the power of cyberactivism to transform reality, it is a fact that it is influenced to the capacity of connecting and articulate the offline and online world, as it was the case of one of the most famous examples of cyberactivism Battle of Seattle that saw more than 40,000 protestors come together via online organizing to take on the World Trade Organization, using bottom-up and tactical media (**Kahn; Kellner**, 2004).

Therefore, **Fernández-Prados et al.** (2021) highlights ambivalence and globalization as essential characteristics of the impact of information and communication technologies in the political sphere but also calls attention to the power of

cyberactivism to take us to the level of concrete actions with unconventional political purposes, promoted online by social movements. In this context, contemporary cyberactivism creates digital debate on progressive thinking (Nunes, 2020), and urgent topics predominate in the field of new social movements such as feminists, ecologists, pacifists, or alternative movements (Fernández-Prados *et al.*, 2021). This can be translated for topics like women's environmental cyberactivism, which we will be talking about in the next sections.

1.2. Environmental Cyberactivism

Environmental issues have been a rising concern throughout the world in the last few years, as we can see the topic in the middle of economic and political debate worldwide. At the same time, the Internet has become a major organizing and mobilizing tool for environmentalists around the world (Castells, 2020), no wonder that the environment is one of the main subjects of online activism (Mentes, 2019). As the global temperature rises, the sixth mass extinction in the history of the planet is unfolding before our eyes and climate catastrophes hit the world at an alarming rate (Barla; Bjork-James, 2021), Environmental Cyberactivism is more relevant than ever.

In the case of environmental activism on digital media, since the mid-late 1990s, web-based environmental organizations and communities have been flourishing to stimulate interest in environmental issues (Habsari; Rohmatin; Istadiyantha, 2021). Some contemporary examples have been rising, as the environmental activism initiated in Sweden, by now widely known climate activist Greta Thunberg, who started the "School Strike for Climate" (SSC), a movement that spread across the globe and develop into something that came to be internationally named Fridays for Future, that flourished due to its usage of digital technologies to engage young people and the tactic has spread. In Brazil, Greenpeace's Save the Amazon campaign in 2019, used social media and other digital channels to raise awareness about the deforestation and destruction of the Amazon rainforest, as well as the role that the Brazilian government plays in allowing these activities to continue.

In this context, we see the rise of another important phenomenon: an unprecedented intensification of anti-environmental politics and various forms of climate change denialism (Barla; Bjork-James, 2021). Diethelm and McKee (2009) conceptualize denialism as a process that employs some or all the five following characteristic elements in a concerted way: conspiracy theories, reliance on fake experts, selectivity in picking papers that in isolation seem to support their claims, impossible expectations of what research can deliver, and misrepresentation and outright logical fallacy. Many alternative words are used about environmental and climate science denial: denial(ism), skepticism, contrarianism, antiscience, doubt, and dismissal (Björnberg *et al.*, 2017), but independently of its name and how people refer to it, denialism elements have significant effects on society.

Miguel (2022) lists three direct systemic effects: it miseducates and confuses the population by spreading false information; This irresponsibly undermines the reliability of science and makes it difficult to make informed decisions in various fields such as politics, economics, and our lifestyle. For the author, climate denialism cannot be understood only as "disinformation" or "ignorance", it is a planned and strategically applied action by certain political groups and also represents the worldview of those who do not share the same reality as political subjects who defend environmental causes (Miguel, 2022). This explains why Björnberg *et al.* (2017) add the point that to properly understand environmental denialism we will have to consider the context and who is the denier.

Some recent examples highlighted by Barla and Bjork-James (2021) is Trump administration's decision to withdraw from the Paris Climate Agreement, to dismantle environmental regulations, and Jair Bolsonaro's support of illegal ranchers and mining operations in the Amazon rainforest as well as his role in inciting violence against environmental and indigenous activists, far-right leaders around the world not only fail to address climate change as a serious environmental and societal threat but also mobilize and embrace different forms of anti-environmentalism and climate change denial for populist politics. In order to counter these movements, we have seen an ongoing effort of activists acting online in their social media, as was the case of the #NãoAoNegacionismoAmbiental Campaign on social media, launched in 2021 to raise awareness about the dangers of environmental denialism and its impact on Brazil's ecosystems and communities.

As the relevance of Environmental Cyberactivism increases, so does the relevance of initiatives to contain Environmental Denialism. Denialism is not a new phenomenon (Barla; Bjork-James, 2021), what seems to be novel in our current conjuncture however is the magnitude of the problem that denial hides, especially for minority groups. This highlights the relevance of Women's Environmental Cyberactivism emerging as a strategy to counter Environmental Denialism.

1.3. Women's Environmental Cyberactivism

Women have been recognized as environmental activists and have had a greater awareness of ecology worldwide since the 19th century. Findings from recent studies show that women are more concerned about environmental issues and problems (OECD, 2011) At the same time they are more likely to be vulnerable to climate change stems from several factors - social, economic, and cultural (Aguilar, 2008). All these findings lead to theoretical explanations of the correlation between environmental concerns with gender expectations that linked women's role to the domestic life and private sphere. Explained by the differences in socialization between men and women leads to different concerns

and perspectives on the idea of environmentalism (**Strapko et al.**, 2016). In this context, Feminism emerges as an ally of the Environmental Cause (**Nogueira; Câmara**, 2018), having Environmental Cyberactivism as a tool for women to have their voices heard and participate in public life while acting for the Environment.

“We understand that intersectional cyberactivism is an important tool for women to have their voices heard and participate politically”

For a better understanding of the connection between Women's Environmental Cyber Activism and Feminism, it is important to understand two relevant feminist schools for this study: CyberFeminism and Ecofeminism. Cyberfeminism presents itself as a feminist activism strategy, which uses the speed of information that the internet disseminates to inform and make women increasingly aware of their condition of oppression (**Pires; Castro**, 2020). On the other hand, Ecofeminism also called ecological feminism is a branch of feminism that examines the connections between women and nature, and has been associated with the Western hegemonic economic system, which links women's domination to the exploitation of natural resources (**Siliprandi**, 2000). The author compares women with nature and men with culture, the latter being superior to the former, believing that “society without the exploitation of nature would be a condition for the liberation of women” (**Siliprandi**, 2000).

Another common point that connects Environmental and Women's Cyberactivism is that both causes are extremely intersectional fights. **Siliprandi** (2000) defines intersectionality as a metaphor for understanding the ways that multiple forms of inequality or disadvantage sometimes compound themselves and create obstacles that often are not understood among conventional ways of thinking. This sociological concept explains that inside the environmental and women's movements, individuals of minority groups are disproportionately affected by these movements' encompassing issues. Women's environmental cyberactivism must consider the intersectionality that encompasses their realities and how they interact between these different power structures.

We can conclude that Women, the Environment, and Cyberactivism are strongly connected by the nature of their fights and relevant schools. We understand that intersectional cyberactivism is an important tool for women to have their voices heard and participate politically, but we need to be vigilant to ensure that this space will be preserved and respected. It is soon necessary to discuss the role of women in social movements, recognizing their role and not treating them as simple supporting actors, as history has done for so many generations (**Pires; Castro**, 2020), and so the history they are doing with their environmental cyberenvironment activism.

2. Methods

This research is based on an exploratory, interpretative qualitative method approach. This approach seeks to understand the perceptions and subjective experiences of human actors in a particular social context. Our method approach started with a Scoping review, analyzing existent literature, and then conducting an Instagram Netnography study, analyzing digital narratives in the context of environmental cyberactivism, which contemplated the data collection and thematic analysis.

2.1. Digital Narratives in the Context of Environmental Cyberactivism

Narratives are a powerful resource for cyberactivists to communicate, to position themselves through new media, and to envision new realities. According to **Helgeson; Glynn, and Chabay** (2022), the expressions in the digital space are a window for assessment of emerging and persistent DNs (Digital narratives) on supporting or opposing movements towards sustainability and societal resilience.

The etymology of the term Narrative comes from the Latin word *narrativus* which means ‘telling a story’. In that sense, narratives are forgiving, flexible cognitive frames for constructing, communicating, and reconstructing mentally projected worlds (**Herman**, 2002). **Bruner** (1991) adds another layer to the concept when argues that narratives are a fundamental way in which humans make sense of the world, by organizing and structuring our experiences into coherent and meaningful stories. For the author, the central concern is not how narrative as text is constructed, but rather how it operates as an instrument of mind in the construction of reality and the cultural and social context in which narratives are constructed and shared.

Digital Narratives are those narratives circulating in the digital space which have in their foundation a structure that allows a different set of skills and design principles than the traditional linear narratives. **Miller** (2014) defines digital storytelling as the use of digital media platforms and interactivity for narrative purposes, either for fictional or non-fiction stories. This new form of conveying information, also called IDS (Interactive digital storytelling) **Laurel** (1986) enables the user to influence the flow and sometimes even the content of the story. Through both individual and group-led initiatives, it enables the rapid dissemination of group communications, and serves as “worldmaking” vehicles (**Vervoort et al.**, 2015). The

“Narratives are a powerful resource for cyberactivists to communicate, to position themselves through new media, and to envision new realities”

possibility of creation, interaction, and sharing, and so the construction and reconstruction through different resources expand the possibility of imagination and narrative production.

Digital narratives in the context of Environmental Cyberactivism are not simply passive reflections of reality but are active agents in shaping our understanding of the world. Helgeson *et al.* (2022) stated that observing temporal changes, globally, in the frequency, sources, and content of DNs can illuminate emerging trends in the perceptions, attitudes, norms, hopes, or fears of individuals and groups. Narratives in the context of Environmental Cyberactivism have the power to make us reflect and reinforce broader cultural and social norms and values regarding the concerns in a specific cultural and social context.

2.2. Digital Narratives on Instagram

Instagram is a visual native website built on the idea of communicating and interacting. Its features allow visual and textual expression through public or private profiles and verified or unverified accounts, as explained in Table 1. Bio elements are explained in Table 2, and visually illustrated in Figure 1. Other key elements for the digital narratives on Instagram are photos, videos, and captions as explained in Table 3.

Table 1: Instagram Accounts.

Profile Level		Account Level
Public Profile	Private Profile	Verified Account
These accounts provide open and unrestricted access to their information	Restricted profiles require an explicit approval from the owner to access them. These profiles fall into three categories: Personal, Content Creator, and Brand.	Content Creator and Brand Profiles have the option to undergo verification to verify that the profile indeed belongs to the respective person or institution.
Source: Retrieved from Instagram (2023)		

Table 2: Instagram Profile Elements.

Username	Picture	Bio	Category
The username serves as a distinctive identifier that represents them on the platform.	An image to visually represent user's identity on the platform, which can be a personal photo, a logo, or other.	A section enables users to provide a description of themselves, sharing details such as their interests, profession, location, etc.	Instagram offers more than 1.500 categories for users to identify themselves, depending on the purpose of their Instagram account.
Source: Retrieved from Instagram (2023)			

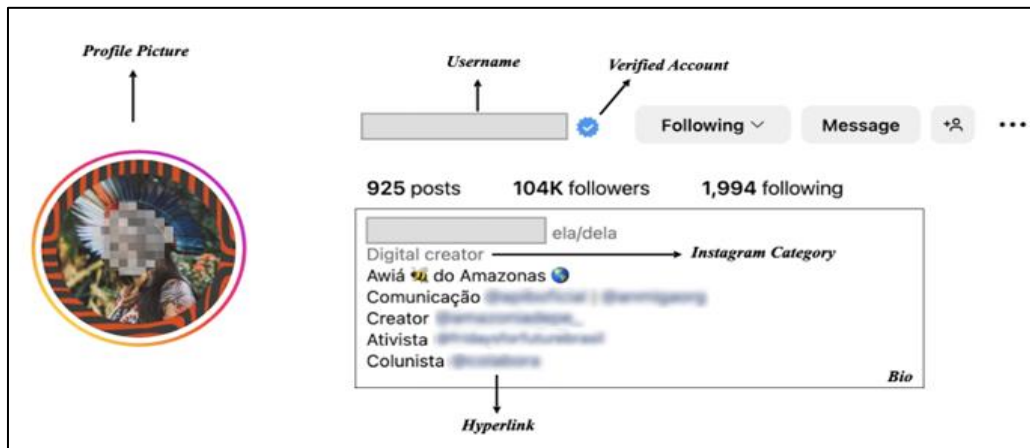


Figure 1: Instagram Bio Elements.

Table 3: Instagram Post Elements

Posts		
Photos	Videos	Captions
Content that includes photos and captions or textual descriptions. Maximum of 2,200 characters per post; (+300 words)	Longer content. Videos with or without audio, from 15 seconds to 10 minutes.	Texts inside the posts. It can include textual resources, as well others like Hashtags or hyperlinks.
Source: Retrieved from Instagram (2023)		

2.3. Netnography Procedures

We have Netnography as the main framework of the study: a qualitative social media approach for research (Kozinets, 2009), understood as a multiple toolbox and adaptable for achieving the objectives of the study. The netnography in this article resulted from a non-participatory online observation process on posts of Brazilian Women Environmental Cyberactivists on the social network Instagram. This involved observing participants without actively participating, a method used to understand a phenomenon by entering the community or social system involved, while staying separate from the observed activities. Our unit of analysis was based on Posts, Videos and correspondent subtitles about the topic

of Environmental Denialism. The timeframe analyzed was the Brazilian 2022 Elections period (1st and 2nd round), specifically from 16th of August (formal beginning of the election campaign), until 30th of October (end of 2nd round).

Ethnography has its roots in anthropology and in the methods of studying social groups used by its researchers (Geertz, 1974). Hine (2000) explains that the common point of virtual ethnography and virtual ethnography consists precisely of the researcher’s immersion in his field, or "setting". According to Kozinets (2009), netnography uses computer-mediated communications as a data source to arrive at an ethnographic understanding and representation of a cultural phenomenon on, through and for the internet. A netnography is a specific set of related data collection, analysis, and representation research practices” guiding the use of social media for participant-observational studies (Kozinets, 2015). In this sense, it differs from ethnography in terms of the object field, but netnography follow the same six steps of ethnography: (1) research planning, (2) entrée, (3) data collection, (4) interpretation, (5) ensuring ethical standards, and (6) research representation (Kozinets, 2010), which will be pursued in this study.

This study followed a framework inspired in the Ethnographic method (Spradley, 2016) which considers 3 steps of observation (1) General Observation; (2) Focused Observation (3) Selected observation, from the whole to the specific. The first step was to identify and gain knowledge about the population through a Desk Research, conducted by the author in December of 2022 in two main sources: (1) Instagram Social Media; (2) Other secondary sources. Based on the cyberactivists identified in the Initial Phase/Desk Research, we conducted a purposive selection, resulting in 25 activists accounts for the data collection and analysis procedures, which considered six inclusion criteria regarding the study objects as in Table 4.

Table 4: Inclusion Criteria for the Account Selection.

Inclusion Criteria	
1.	Posted on Instagram about Environmental denialism (at least 1 post)
2.	Posted during the Brazilian 2022 Elections: Between August and End of October
3.	Women who neither ran in the Elections nor have public positions in the government
4.	Public Profile on Instagram
5.	More than 10k followers (Micro influencers)

The inclusion criteria were established to precisely target specific content and timeframes, mitigating potential biases associated with government ideology, upholding ethical standards, and selecting profiles with substantial online presence to influence public opinion. The first criterion narrowed the focus to narratives directly addressing Environmental Denialism. The second facilitated the analysis of narratives within the context of the politically charged period of the 2022 elections in Brazil, capturing relevant dynamics and conversations. The third criterion excluded women directly involved in the elections or holding government positions, emphasizing voices from civil society or grassroots movements. This ensured that narratives came from individuals outside the political establishment but with significant influence. The fourth criterion ensured that the content was accessible for analysis, while the fifth identified individuals with over 10,000 followers on Instagram (micro-influencers), indicating a noteworthy level of influence within a specific community. This approach not only ensures the effectiveness of their narratives but also guarantees that selected activists have a reach substantial enough to impact public opinion.

2.3.1. Data Collection and Analysis Procedures

At the initial stage of the Netnography, all posts and videos related to Environmental Denialism and extracted all textual, image, and audio from this context were collected. The study collected data from 25 participants, 12 of whom had verified accounts, with a total of 99 photos and 44 videos as we can see in Table 5.

Table 5: Data Collected Summary.

Unit Analysis	Photos	Videos
Amount	99	44
Mean	3,96	1,76
Standard Deviation	5,62	2,08

To support the data collection, (1) Field Notes with descriptions and reflexive comments were registered from the observations and uploaded (2) Archives with correspondent data (copies, print screen and downloads) and the correspondent transcriptions when needed. Data were collected and registered in the activists language: Brazilian Portuguese. For the construction of the Data set analysis, we relied on the five data analytics operation steps of Kozinets (2015): (1) Collating (2) Coding; (3) Combining unites; (4) Counting; (5) Charting. Throughout the process we counted on the auxiliary software Atlas TI 22, a tool for qualitative research and Gramhir, an Instagram data analytics tool.

As a qualitative interpretative research method, interpretation was present throughout all the netnographic process. First of all, all the data were collected, meaning the 99 photos, 44 videos, the respective transcriptions and posts were uploaded in Atlas TI 22, the dataset was anonymized, and all data prepared for coding. By analyzing the data it was possible to creating codes, in order to organize the data. The coding process relied on memos to record thoughts,

interpretations, and ideas that emerged in the analysis process. It was the base to identify the funding 4 dimensions that structure the work. The codes were applied to relevant segments and hierarchies and the unit's combination process resulted in the identification of 15 subcategories and 5 categories. Taking an inductive approach to code and analyse the data enabled the content to speak for itself without anticipating possible themes.

Having all the data set we applied the Theming technique with the objective of gathering the pattern codes and making them into larger things. The technique encompasses seeking insights about the way people structure and share their lives as narratives, and interpreting them in order to create meaning from netnographic data. Thematic analysis is a recognized method used by qualitative researchers to organize and analyze a dataset without losing meaning or context (Clarke; Braun, 2021). The researcher must construct a world in which the texts make sense allowing them to answer research questions (Krippendorff, 2018). The use of thematic analysis enabled to answer the correspondent research questions and identify repeated emerging patterns in the data and develop insight and understanding from those themes.

Also, the website Gramhir made it possible to identify number of followers, account rates, general number of posts, photo ratio, video ratio, so it was possible to go beyond of the data previously collected and compare the accounts and bring more elements to the analysis. Lastly we organized codes and the categories into a hierarchy which made easier the visualization, mapping, organization and display of data. It helped in creating a more structured and comprehensive overview of the themes, dimensions, categories and subcategories and how they are interconnected. In Table 6, we present a summary of the Research Techniques and connect them to each research question.

Table 6: Research Techniques.

Research Techniques		
Research Question	Data Collection	Data Analysis
1. Identify (mapping) women online activists who are fighting against climate denialism in social media	Secondary Research – Desk Field Notes Gramhir ¹	Analysis of the Inclusive Criteria Netnography
2. Analyze their digital narratives and categorize the strategies that support the expressions of their activism.	No participatory observation Collecting and Saving Videos, and Posts manually Transcription of videos	Netnography (1) Collating; (2) Coding; (3) Combining Unites (4) Counting (5) Charting Atlas TI Theming
3. Analyze how these strategies contribute to the creation of meaning and the construction of reality in their digital narratives.		

2.4. Research Ethics on Instagram Netnography

Netnography's key concerns lie squarely in between the complex ethical issues of traditional ethnography and those of social media research (Kozinets, 2010). Currently, although there is not a consensus about online research ethics, there are general resources available, which were used as a guardrail to construct the premises for this netnography study. The research took into consideration the AOIR Ethical Guidelines 3.0 from the Association of Internet Researchers (Franzke *et al.*, 2020), the NESH guidelines for Research Ethics in the Social Sciences (NESH, 2022), and the Code of Conduct for Research Integrity at the University of Barcelona (Universitat de Barcelona, 2020).

Our choice of methods vis-à-vis given research questions and design evoke specific ethical issues – but these in turn (should) shape our methodological choices, so we are likewise confronted with the need to revisit our initial ethical assumptions and design (Franzke *et al.*, 2020). Following this assumption, ethical decisions were made throughout all the research phases, with some areas of special attention: Private vs public, Informed Consent, Anonymity, and Risk of Harm. As a result, we believe that it is possible to work ethically with the information available in public profiles even if we do not have informed consent, as long as we guarantee the total anonymity, privacy, and security of the participants (Franzke *et al.*, 2020), and does not make commercial use of them, as stated with more details in Annex Table 7.

3. Results

As a result of the methodological process, we organized the main findings in 3 sections, connected with the Research Objectives. In the first place, we present elements regarding the activist's map, in the second one, we show the strategies categorized in which they express their activism, contemplating the criteria mentioned in the methodology and lastly we show the pathways of how these strategies contribute to the creation of meaning and the construction of reality in their digital narratives.

3.1. The Women Environmental Cyberactivists Countering Environmental Denialism on Instagram

The Instagram Account is the vehicle that the cyberactivists express their activism on social media. To deeply understand the map of activists, we have collected available information regarding their own accounts: account categorization, year of creation, number of followers, account rate, data about their photos, posts and videos and self-presentation.

¹ Gramhir: website for Instagram data analysis: <https://gramhir.com/>

In relation to the year the participants created their accounts, most of them joined Instagram between 2011 and 2014, totaling 52%, others (48%) created their account between 2015 and 2018. All of them have been producing content for at least five (5) years in social media. Having the User profile username and image is the front door of their profile, most of them (68%) use their name and/or surname and 80% a personal photo as a username in their Bio. The least part (20%) uses other names, and 32% a logo as an image that reflects their desired image. There are 62,5% of the participants who use logos instead of personal profile pictures also use other usernames, which indicates they may have created a brand to express their content.

Throughout their journey as cyberactivists, they have accumulated followers, posts and had their accounts rated. When analyzing the mean of the 24 followers account, the number is 77.730, having the account most followed with 324.704 followers and the least 10.256. The account rates refer to their level of engagement with the Instagram community and how they interact with others. This varies substantially with the minimum with 3.97% and the maximum 96.92% as evidenced in Table 7.

Table 7: Cyberactivist’s Account Data.

Data	Number of Followers	Account Rates	Number of Posts	Photo Ratio	Video Ratio
Max	324.704	97%	4.833	92%	100%
Minimum	10.256	4%	2.06	0%	8%
Mean	77.730	57%	1.510	51%	48%
Standard Deviation	83.662	32%	1.086	28%	29%

Source: Data Collected on Gramhir (April, 2023)

In total, they accumulate almost 2 million followers, which is considered almost 2% of the total Brazilian population on Instagram (see 2.2) in case users only follow one of the 25 Instagram accounts. Regarding the total number of posts, the one who posted the most had 4.833 posts, and the minimum 206, with a mean of 1510. For photos and videos distribution we can see a very similar behavior with a mean of 51% for photos and 48% for video.

With reference to how they define their accounts in the platform, the Instagram categorization shows that the most cited topic is Digital Creator (20%), followed by Artist (8%), Writer (8%), and Public Figure (8%). 44% of the participants do not include any Instagram account category in their profile as shown in Table 11 (Annex).

Table 8: Instagram Account Category.

Instagram Category	%
Digital Creator	20
Artist	8
Public figure	8
Writer	8
Community	4
Education	4
Journalist	4
No description	44
Total	100

Source: Data Collected on Instagram – April (2023)

Related to their Creation perspective, their creations encompass original work or content using or not digital tools and technologies, as Books or, E-books, Podcast, TV Show, Other Platforms Courses, Content, Workshops, Lectures. Some of them have also participated in a program called “Creator Pelo Clima”² or Creator For Climate, the program, which is part of the “Amazonia em Pé” Campaign, aimed at developing content creators dedicated to the socio-environmental agenda, where they receive a monthly grant so that Creators can fully dedicate themselves to producing content.

In their Instagram Bio, they present themselves, highlighting the following three main words: Activist (Ativista), Socio-environmental (Socioambiental) and Indigenous (Indígena), which were cited three times each. Moreover, the way they describe themselves in their bio also vary consistently, according to Table 9, including fields of professions, roles, and recognition, with highlights to arts and media or communication fields.

Table 9: Professions, Roles, and Recognition.

Professions			Roles	Recognition
Arts	Media or Communication	Others		
Poet; Singer; Composer; Visual Artist; Designer; Book author; Writers' Circle;	Presenter Actress Communicator Speaker; podcast; Columnist;	Environmental Engineer; Geographer; Nutrition; Consultant; Internationalist	Multiplier Mentor; Ambassador; Co-founder or chair of an organization or cause; Contributor; Environmental Activist	Master's Student; Doctor Honoris Causa; Winners of the 2022 Zero Waste Award; Knight of the Order of Cultural Merit

Source: Data Collected on Instagram – (April, 2023)

² Creators For Climate Program: <https://creatorspeloclima.nossas.org/>

Another way they use to refer to themselves in their narratives are identity attributes such as woman, black indigenous, warrior, Auwá; Chilean and “nordestina” (from the northeast of Brazil). These attributes relate the cultural influence, socialization and sense of belonging, where they have experience and memories. Also, the overlap of identities frequently appears, and recognize their experience in multiple forms, creating unique experiences and challenges. After identifying the 25 activists, we conclude that they have a very close relationship to the creation of digital content, but at the same time there is no stereotype of a cyberactivist: they have multiple identities, and creations.

After identifying the 25 activists, we conclude that they have a very close relationship to the creation of digital content, but at the same time there is no stereotype of a cyberactivist: they have multiple identities, and creations

3.2. The Digital Narrative Strategies

Regarding the strategies, we identified six themes that encompass the expression of Women's activism: Identity, Emotions, Community, Actions, and Rationality. These themes are framed by the four cross dimensions of analysis: Individual; Subjective, Objective, and Collective as illustrated in Table 10, and for better comprehension were exemplified with the data collected, all collected from the Cyberactivists Instagram Accounts.

Table 10: Result Analysis – Themes.

Theme	Dimension	Categories	Subcategories
<i>Identity</i>	Individual Subjective	Value's Expression	Self-Presentation, Personal Narratives; Political Positioning
<i>Emotions</i>	Subjective Individual	Emotional Expression	Future-Oriented Emotions; Present-Oriented Emotions
<i>Community</i>	Collective Subjective	Community Building	Engagement; Collaboration; Activism;
<i>Actions</i>	Collective Objective	Collective Action	Co-foundation and collaboration in organizations; Shared Posts; Campaigns;
<i>Rationality</i>	Objective	Reasoned Information	Scientific evidence: Cause-and-effect relationships; Logical reasoning; Counteracting Misinformation;

3.2.1. Theme 1. Identity – Values Expression

The identity through the subjective dimension is directly related to the cyberactivist’s personal experiences, perspectives, and interpretations. It acknowledges that all of them have their own unique understanding and perception of themselves and how they fit into the world. Also, from another perspective, the individual dimension of identity refers to the unique characteristics, traits, and experiences that distinguish one person from another. It recognizes that each one has their own distinct set of qualities, including their personal history, background, beliefs, values, and aspirations. In this sense, identity is not solely determined by external factors, but it is also shaped by an individual's inner thoughts, feelings, values, and beliefs.

These elements are well expressed in the way they as individuals construct and express their sense of self, as it is well exemplified by their self-presentation to express their values. In the case below, both activists express their own unique identity, highlighting their position or profession as in Figure 1. (Actress and Environmental Communicator), and Figure 2. (Communication, Creator, Activist and columnist). They also show different attributes as Geographical Region (Awaí do Amazonas) in Figure 2 and Creations (Book) in Figure 3.

We identified six themes that encompass the expression of Women's activism: Identity, Emotions, Community, Actions, and Rationality we identified six themes that encompass the expression of Women's activism: Identity, Emotions, Community, Actions, and Rationality

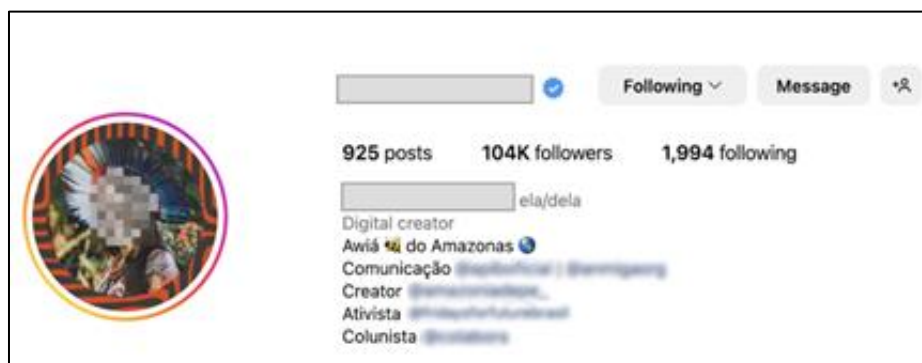


Figure 2: Identity - Geographical Region.

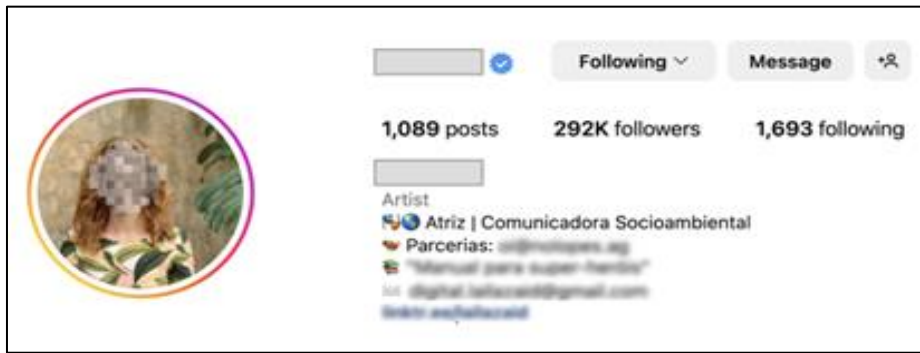


Figure 3: Identity – Creations.

Another strategy to make values more tangible is through personal narratives. When cyberactivists open up about their challenges, struggles, or triumphs, it humanizes their experiences and helps others connect with their values. In the following sentence, the cyberactivist recounts her personal experiences as an Indigenous Woman and the consequences of current politics in her life and in the lives of close people. She ends up making an invitation for people to join a movement to counter it.

“I am an indigenous woman from the Amazon. I come from Rondônia, one of the most dangerous places for activists and defenders of the environment. And I saw all the destruction up close, all the neglect, all the hatred of this government. I buried my friend who was murdered for being a forest guardian and not only him, I buried my two grandmothers who died of covid because of how this pandemic was handled. I felt the threats to our lives increase every day... The Amazon is experiencing an invisible war that Brazil is not aware of. I count on all of you.” (Cyberactivist 8; Video transcription)

Electoral positioning came up as a channel to express values directly connected with the context of the 2022 Brazilian Elections. This happened with cyberactivists positioning in favor or against specific candidates, as in Figure 4, where the cyberactivist position herself in favor of the Candidate “Lula” or disseminating voting aligned with environmental issues as in Figure 5, where the image shows the sentence “Let’s elect a national congress that defends the environment”.



Figure 4: Identity - Electoral Positioning.



Figure 5: Identity -Voting aligned with the Environment.

This evidence shows their alignment with a particular political ideology, and intention to influence public opinion by shaping the narrative and influence how the public perceives and discusses the topic at hand, also illustrated in the following quote. Another electoral positioning was in favor of the election of specific population, like black women or indigenous people, as illustrated in the quote below:

“Today, like never before, this country attacks us, massacres us and wants to destroy our territories. There is no independence without autonomy for the original peoples. That's why changing Congress and electing indigenous candidates is the only way. Out Bolsonaro!” (Cyberactivist 6; Post Caption)

3.2.2. Theme 2. Emotions - Emotional Expression

Emotions through the lens of a subjective dimension refers to how cyberactivists experience personally and internally emotions and express specific reactions and a strong feeling derived from a situation or mood. While reasoned arguments rely on evidence and logic, emotional appeals complement them and are individually interpreted. Everyone has their own unique experience of emotions, and unique emotional patterns and responses exhibited by individuals. Emotions have the consequence of awakening other's emotions.

On one side, photos, videos, and captions express emotions characterized by an optimistic outlook, belief in the possibility of positive outcomes, and a sense of anticipation or expectation for a desired outcome. This is expressed in Figure 6, when the activist affirms: “Calm, nervous and ready to deny the flood of lies that this government will invent this week. Only 6 days left”. In her T-Shirt she has the same message, highlighting her motivation, resilience, and a belief that things can improve. She also expresses a bright smile, lifted eyebrows, widened eyes, with an open and relaxed posture. It is a future-oriented emotion, as it involves looking forward to positive possibilities and envisioning a better future.

On the other side videos and captions that express negative emotions are characterized by a strong sense of anger, righteous anger, or moral outrage, translated by indignation with a specific situation. This is expressed in Figure 7, when the cyberactivist exposes a couple of images of a devastated land after a firework in Amazon and strong statements expressing discontentment by saying “There is nothing left. From the trees, only ashes. And from fauna, despair, and death in nature, where everything is intertwined. Insects, mammals, plants, evaporation, nourished soil”. The image has darker tones, intense imagery, dissonant elements conveying unrest, rebellion, or social critique. Indignation can be categorized as a present-oriented emotion, as it is often a reaction to a specific event or situation that is perceived as unjust or wrong.



Figure 6: Emotions - Future Oriented.



Figure 7: Emotions - Present Oriented.

3.2.3. Theme 3. Community – Building Community

Community in a Collective Dimension can be defined as a group of individuals who come together based on shared interests, goals, or geographic proximity to create a sense of belonging and mutual support. This definition emphasizes the collective nature of a community, where individuals actively participate and contribute to the well-being of the group as a whole. One Community building can facilitate collective action in some cases, but differently, its primary purpose is to create a supportive environment where individuals can connect, interact, and share content related to their shared interests.

This is translated by creating engagement and collaboration when actively engaging with the followers and other users on the platform through likes, comments, direct messages. Responding to comments, asking questions, and initiating conversations can help foster a sense of belonging and build relationships within your community, as we can see in Figure 8, when the activist include an image asking a question “Do you want to know more about the deforestation on Amazon?” and a caption with the following words “Inform, Access and Share”, asking for their followers to engage and collaborate with the post.

Other alternative resources are used for creating engagement and collaborations, such as Artistic Expressions, like Memes, which have a more inclusive language and calls the attention of the follower, boosting the possibility of sharing this content, at the same time fostering critical thinking. One example is the cyberactivist that reposted a post with the hashtag #Artivism, including the Minister of Environment, making reference to him being elected, and the Exterminator, as we can see in Figure 9.



Figure 8: Community – Invitation.

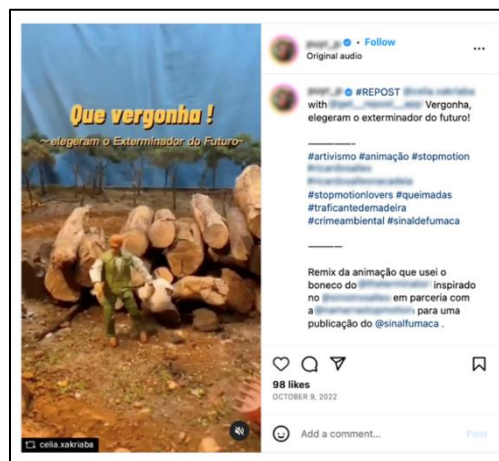


Figure 9: Community – Artivism.

3.2.4. Theme 4. Reason – Reasoned Arguments

Reason serves as a rational and logical framework for cyberactivists understanding, navigating, and communicating with the objective world. The objective dimension refers to the external reality that exists independently of cyberactivists thoughts, beliefs, or emotions. In the context of environmental denialism, reasoned arguments bring a construction that complements subjective perspectives, bringing evidence, information, logic, and critical thinking, to give visibility to the current situation and the urgency of action.

Scientific evidence claims and emphasize the importance of evidence-based decision-making and as the case in Figure 10, when the cyberactivist bring data about the deforestation in the Amazon Forest and connects with the historical presidents or in Figure 11, the cyberactivist cite Nature, the world's leading multidisciplinary science journal by saying that according to the journal, there there is only one option for brazil and for the world, and the current government (related to 2022), is a threat to science, democracy and the environment.



Figure 10: Reason - Scientific Evidence.

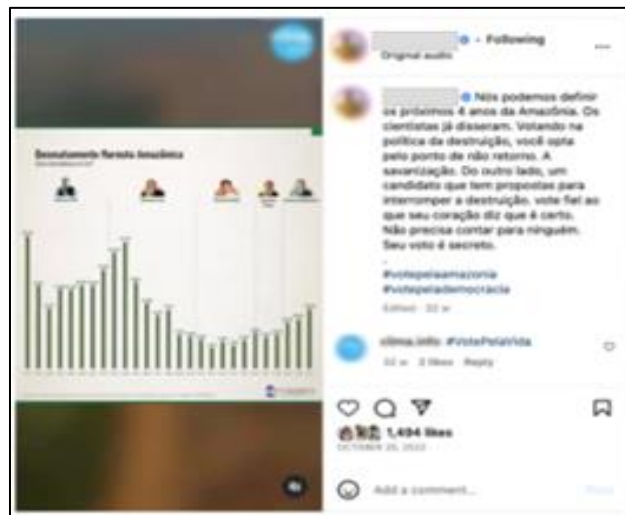


Figure 11: Reason Scientific Evidence.

Other several quotes, bring scientific data as illustrated in the following sentence “We are talking about the biome most attacked by illegal activities against the Environment, the Amazon had 33,116 fires in August, the highest record for the month since 2010, this is a number that only grows, and needs our voice to make changes.”, or in the case of Figure 12, when they use logical frameworks to compare candidates and help followers to create connections and decisions around the topic, in this situation, about their votes.

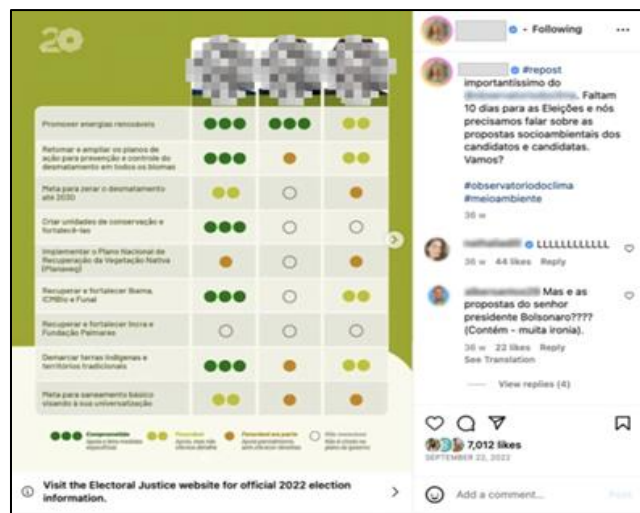


Figure 12: Reason - Logical Frameworks.

By providing accurate information, fact-checking, and contextualizing data to counter misleading claims, activists dismantle denialist narratives and promote a more informed public discourse, as in the case below, when the activist manifests after the election debate to counter a denialism narrative:

"I woke up stuck. In the presidential debate yesterday, a lie about deforestation in the Amazon was repeated several times. It's a lie.

In the last government, the deforested area in the Amazon grew 73% according to the Observatorio do Clima and data from INPE." (Cyberactivist 5, Post Caption)

Aligned to it, another strategy is to create a cause and effect relation between misinformation and deforestation and present a platform called Sinal de Fumaça³, that helps to address and debunk misinformation propagated by environmental denialists, as in the quote below.

"Open your eyes, misinformation and deforestation go hand in hand! Over the past 4 years, the current government has been the main source of misinformation about the Amazon. But, are we going to spread the truth? Here are some absurd data on deforestation in the Amazon between January and May of this year. The equivalent of 2,000 football fields were knocked down in just 151 days. It is the greatest devastation recorded in the last 15 years!.... This publication is from the "Sinal de Fumaça" monitor and makes a survey of the main events in the Amazon agenda in the last 4 years. I invite you to download the guide, get informed and place the Amazon rainforest as a central agenda in the second round of the elections." (Cyberactivist 2; Post Caption)

3.2.5. Theme 5. Action – Collective Action

The Collective dimension of the action gives her the character of collective mobilization to organize efforts by a group of individuals who come together to address specific issues, regarding Environmental Denialism. Through Instagram, cyberactivists reach and connect with like-minded individuals across geographical boundaries and bring together diverse perspectives, skills, and resources, allowing for a greater impact and influence in advocating for social change.

One of the collective action expressions is through the involvement with other organizations. We identified that the cyberactivists act in a network and frequently are associated with other organizations, being a contributor, or even the founders. They present other organizations in their posts or in their bio as in Figure 13, when the activists include the hyperlinks for other 7 organizations, signaling her capacity for acting collectively.



Figure 13: Action - Involvement with Organization.

Another example is the creation of collaborative campaigns, as the "Amazonia em pé"⁴ campaign in Figure 14, that had the objective to mobilize people to join the movement and collect signatures for a project of law to protect Amazon. They got together 16 activists, in a video format. The timeframe was between: 3rd and 10th, September, and sought to transcend online spaces, involving offline activities, demonstrations, or advocacy efforts, to mobilize a broader audience, reach policymakers, or influence public opinion. In this case, the cyberactivists published shared posts, having their account associated one to another, which makes it possible to amplify their message and reach new audiences.

³ Sinal de fumaça: <https://www.sinaldefumaca.com/>

⁴ Amazonia de pé: <https://amazoniadepe.org.br/>



Figure 14: Action – ‘Amazonia de Pe’ Campaign.

Another collective action expression detected was the dialogue between two or more cyberactivists about a specific topic. In the video, shown in Figure 15 and 16 they dialogue about Amazon’s current situation and bring as a resource, the released a guide from “Sinal de Fumaça” platform which provides information, and create the relation between the disinformation and the socio-environmental dismantling. It was an isolated action, on 2nd September.

“What would you feel if you had a magnifying glass over sixty percent of the national territory, where thirty million people live and which includes the most important Tropical Forest on the planet. Yes, I’m talking about the Legal Amazon, did you know that it occupied a study. “Cyberactivist 7 and 5” (reference to the dialogue) reacted to some of the highlights of the Legal Amazon and the Future of Brazil guide released by the smoke signal monitor. The material makes an X-ray on how the herd impacted the nine states of the region document proof of lies and fake news that is about this cause that belongs to all of us. So come on “Cyberactivist 5” (reference to the dialogue), I want to see how you react to this one.” (Cyberactivist 5 and 7. Video Transcription)



Figure 15: Action – Sinal de Fumaça Campaign 1.



Figure 16: Action- Sinal de Fumaça Campaign 2.

3.3. The Digital Narratives and the Meaning Creation

After analyzing the five themes and strategies used by cyberactivists to express their activism it was important to understand the objective behind its strategies to understand how they create meaning, and consequently new realities. That is why it is expressed as an action, using verbs that involve the act of producing or bringing something into existence. While "generate" implies a process or method involved in the production, "create" emphasizes the act of making or shaping something. For this understanding the symbolic dimensions – Subjective and Objective have a foundation role, as defining the action related to the categorie's purpose.

On the one hand, generating Identification, Action and Sense of Belonging through Digital Narratives require some steps and are transformative in its process that happen in dialogue between cyberactivists and its followers. It requires exploration and discovery, personal reflection, and it evolves and develops over time. On the other hand, creating Reasoned Information and Collective Action involves intentional human agency, collaboration, and coordination among individuals who come together to pursue a shared goal or address a common objective.

To conclude the results analysis, we identified that women's Cyberactivist's narratives to counter Environmental Denialism operate in four Symbolic Dimensions (Individual, Collective, Subjective, Objective) connected with categories (What), subcategories (How), and an effect (Why) that make possible the creation of meaning and new realities

To conclude the results analysis, we identified that women's Cyberactivist's narratives to counter Environmental Denialism operate in four Symbolic Dimensions (Individual, Collective, Subjective, Objective) connected with categories (What), subcategories (How), and an effect (Why) that make possible the creation of meaning and new realities. The summary, in Figure 17, the final framework of the study, summarizes the main elements and their integration.

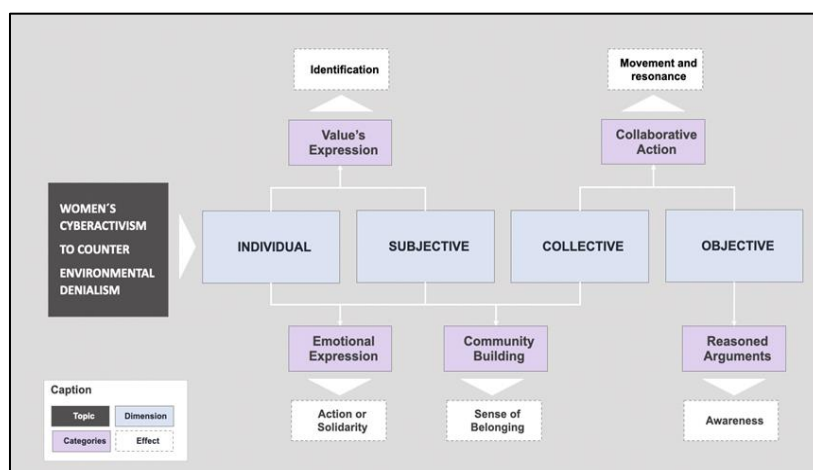


Figure 17: Final Framework of the Study, the Main Elements and their Integration.

4. Discussion and Conclusion

The main objective of this investigation was to analyze how Brazilian women's digital narratives operate in the context of environmental cyberactivism to counter environmental denialism on Instagram. The methodology, netnography, an emergent and nontraditional method in the field of social science was the framework for the study, which ended up with a thematic analysis. We recognize the relevance of this study for the innovative methodology, and the absence of studies in the Brazilian context that consider this methodology and the topic of environmental denialism in the field of sociology.

The first objective aimed to identify the cyberactivists countering environmental denialism narratives on Instagram. We identified that the date of their Instagram accounts creation match with the first beginning of what **Nunes (2020)** define as the routinization of cyberactivism: social networks (2013-present), when cyberactivism ceases to manifest itself exclusively on web portals and blogs and transition to social media as Instagram. This routinization is also reflected by their constancy of online manifestations, as all of them have been acting online for at least five (5) years on Instagram.

The cyberactivists refer to themselves in a multiplicity: from poet to geographer, with highlights to the field of media and arts. What unites them is not a specific profession, a role or recognition, but the possibility of acting online for a cause, characteristic enabled by social media with which an individual can get involved in the processes of formation of collective identities and local and global causes (**Fernandes et al., 2020**). They frequently refer to themselves as women activists, which is relevant in the context of Brazil, one of the worst countries to be an activist in the world (**Global Witness, 2020**), and globally, although they are more concerned about environmental issues and problems (**OECD, 2011**), they are more likely to be vulnerable to climate change stems (**Aguilar, 2008**).

Beyond women and activists, other identitarian attributes appear, such as black indigenous, etc., and frequently were overlapped. This overlapping reflects the intersectionality (**Crenshaw, 1989**) that encompasses their own life and consequently reverberates to the expressions of their activism. It is important to understand the multiplicity of their experiences as well as how they are affected by the dynamics of power and sociocultural privilege between hegemonic groups and subordinate groups (**Parent et al., 2013**). This is strongly connected to previous study conducted on Facebook of female's narratives where the author identify the adoption of feminist positioning and self-identification by environmentalists, recognizing the specificity of women's struggle in the environmental cause and contributing to a dual activism marked by feminist environmentalism (**Nogueira; Câmara, 2018**) evidence the connection between causes and identities.

Some of the unconventional political actions on social media (**Fernández-Prados et al., 2021**) held by the cyberactivist analysed in the period of the 2022 elections, included the political manifestation through posts, including photos and videos, at a similar rate and engagement, with a high variability. This corroborates to their close relationship to the creation of digital content as the most cited Instagram Category as an aspect of their self-definition, which is closely related to the definition of social media possibilities, which allows the creation and exchange of user-generated content (**Kaplan; Haenlein, 2010**).

The last two objectives aimed to categorize the main strategies these cyberactivists used to express their activism to counter environmental denialism and how they contributed to the creation of meaning. As their cyberactivism may have varied according to Brazil's context (**Nunes, 2020**), the current context, where environmental denialism found new conditions for growth and the exercise of power (**Miguel, 2022**), the expressions of their modern activism (**Sherer, 2023**) encompass environmental denialism issues. The prominence of narratives in formulating human perceptions and guiding decision-making permeates visions of and actions toward sustainable futures (**Morgan; Wise, 2017; Bruner, 1991**) cited in **Helgeson et al. (2022)**. After an extensive data collection and analysis, we identified five main strategies which the cyberactivists express their activism through their digital narratives: Value's Expression, Emotional Expression, Collective Action, Community Building and Reasoned Arguments, which create meaning through the generation of identification, action, sense of belonging and the creation of awareness and movement.

Value's expression is a strategy identified in the study that opposes the nature of Environmental Denialism, which represents a worldview of those who do not share the same reality as political subjects who defend environmental causes (**Miguel, 2022**). Cyberactivists expressed their values in their digital narratives, through self-presentation, personal stories, and political stances. These resources served to make their beliefs more tangible and relatable, as individuals who engage with these narratives find themselves

“ The cyberactivists refer to themselves in a multiplicity: from poet to geographer, with highlights to the field of media and arts ”

“ After an extensive data collection and analysis, we identified five main strategies which the cyberactivists express their activism through their digital narratives: Value's Expression, Emotional Expression, Collective Action, Community Building and Reasoned Arguments, which create meaning through the generation of identification, action, sense of belonging and the creation of awareness and movement ”

identifying with the struggles, ideas, and political preferences presented. Through this process of identification, individuals reflect on and reinforce broader cultural and social norms and values concerning concerns about Environmental Denialism. According to **Bruner** (1996), "culture" acts as the "toolkit" for making sense of and communicating. Thus, in this context, the expression of values serves as a bridge to envision new futures pertaining to the subject matter.

Emotional Expression is another approach used by the Cyberactivists to counter environmental denialism and well aligned with **Castells** (2015), when the author contextualize that Internet has enabled the sharing of two forms of feelings, outrage and hope, which have played a pivotal role in triggering mass uprisings. Also, the understanding of human's subjectivity in the process of activism in the digital age was explored by earlier investigation, when authors connect feelings of injustice and subjective experiences in predicting activism (**Chon; Park**, 2020). Brazilian Elections 2022 has enabled different kinds of emotions. The first, present-oriented emotions, as a reaction to a specific event or situation that is perceived as unjust or wrong, as the fires in Amazon, and second, future oriented, as optimistic outlook, belief in the possibility of positive outcomes, and a sense of anticipation or expectation for a desired outcome, as the ones arising from the elections and the possibility of changes in the government. They have shown the potential to awaken emotions in others and influence perceptions and responses to social and environmental issues, generating action.

Community Building makes it possible to create a supportive environment where individuals connect, interact, and share content related to environmental denialism. This phenomenon finds support in digital storytelling, the use of digital media platforms and interactivity for narrative purposes (**Miller**, 2014). Through engagement, collaboration and artistic expressions, these communities assist individuals in reflecting on and maintaining their cultural identity as a group or community, as well as in articulating their desired or feared visions of an imagined future (**Helgeson et al.**, 2022). Ultimately, this process fosters a profound sense of belonging among participants, well aligned with previous studies that shows the contribution of cyberactivism enhancing bonding (**Parsloe; Holton**, 2018) or fostering solidarity (**Arruda et al.**, 2023).

The effectiveness of collective action in countering climate denialism on Instagram has been strongly evidenced in the study. **Castells** (2015) extensively theorized the potential of digital social networks in enabling unhindered deliberation and coordinated action. This study explored various manifestations of collective action, ranging from collaboration with other organizations to sharing posts and participating in campaigns. It is noteworthy that some of the collective actions investigated not only had an impact within the digital realm but also reverberated offline. **Castells** (2020) elucidated how social media communication instigates street movements and highlighted the transformative power of new media developments in reshaping politics and culture. Other scholars, such as **Sandoval-Almazan and Ramon Gil-Garcia** (2014) and **Nunes** (2020), have also established connections between the use of social media, contemporary cyberactivism, and their potential to bring about societal transformation. This strategy dialogues with previous studies that bring the potential of alignment with other causes, merging the logic of collective and connective action (**Parsloe; Holton**, 2018). These findings underscore the significant influence of collective action as a strategy in creating movements and fostering resonance.

Reasoned arguments play a key role in combating the Environmental Denialism systemic effects listed by **Miguel** (2022), which undermines the reliability of science and it complicates making informed decisions in various fields such as politics, economics, and our lifestyle. To counter it, the women environmental activists expressed their activism with scientific evidence; cause-and-effect relationships; logical reasoning and counteracting Misinformation. The study also revealed the exposure of denialist situations, such as within the electoral debate, and the identification of individuals who deny certain phenomena. These aspects were highlighted as fundamental points for comprehending the subject, as previously discussed by **Björnberg et al.** (2017). This finding reinforce previous work that point out cyberactivism as a new form of participation, and as a platform for educational processes (**González-Lizárraga et al.**, 2016). This approach encourages people creating meaning through the repertoire acquired and consequently generating awareness about the topic.

The identification of the five different strategies in four dimension categories and effects, was possible due to the approach of the netnography methodology, that considered not only the written language or spoken, but also, a contextual interpretation. The utilization of netnography as a research methodology necessitates contemplation on the researcher's role and their involvement in the study. According to **Kozinets** (2015), netnography enables knowledge generation through experiential means. It is crucial to acknowledge that researchers are not mere algorithms or robots; they are complex individuals who must recognize their own subjectivity and how they are exposed to diverse content and experiences to comprehend underlying meanings. Ultimately, conducting research that incorporates netnography calls for a thoughtful examination of the researcher's role, the influence of their presence, and the ethical considerations involved. It is important to remember that researchers are embodied beings who can feel and be affected throughout the investigation process. By addressing these considerations responsibly, researchers can acquire valuable insights and contribute to a deeper understanding of online interactions.

The study has certain limitations associated with the netnography methodology and the presentation of results format. Firstly, ethical considerations required us to make decisions that impacted the availability of data and examples included in the article. For instance, data had to be anonymized, and we could only include examples from verified accounts, which represented less than 50% of the study participants. Consequently, the sample size became limited, restricting a comprehensive understanding of the content. Secondly, demographic information regarding the cyberactivists was unavailable due to restricted access to their Instagram accounts. This lack of data hampers a thorough understanding of the cyberactivists' identities. Additionally, the study focused on analyzing photos, videos, and captions, while excluding the analysis of comments, which form an integral part of digital narratives.

In future investigations, addressing the identified limitations can enhance the robustness and applicability of the research findings. Firstly, to overcome the ethical constraints that led to data anonymization and a restricted sample size, researchers could consider obtaining informed consent from participants for the inclusion of non-anonymized data. This approach would enable a more comprehensive understanding of the content and enrich the analysis by including diverse perspectives. Additionally, researchers should explore alternative ways to ensure ethical considerations while maximizing the inclusivity of data. To address the absence of demographic information about cyberactivists, researchers could employ a mixed-methods approach. Integrating surveys or interviews with cyberactivists, where feasible, would provide valuable insights into their backgrounds, motivations, and the impact of their gender on their activism. Understanding the demographic context can contribute to a more nuanced interpretation of the findings and help identify patterns specific to certain groups of cyberactivists.

Regarding the exclusion of comment analysis from the study, future investigations could incorporate a more comprehensive examination of online interactions. Analyzing comments can unveil the dynamics of engagement, disagreement, and support within the digital community, providing a holistic understanding of the cyberactivists' influence on their audience. Combining visual content analysis with comment analysis can offer a more complete picture of the narrative strategies employed by cyberactivists. Moreover, for studies aiming to capture a broader range of experiences and responses, incorporating interviews with cyberactivists can offer deeper insights into their emotions, motivations, and the perceived impact of their strategies.

In terms of practical applications, the insights gained from this research can inform future studies on cyberactivism and digital narratives. Researchers can build on the identified strategies to develop interventions or educational programs that empower cyberactivists to effectively counter environmental denialism. The study also holds significant relevance in shedding light on the importance and value of women's cyberactivist work, both within Brazil and globally, specially in the context of climate change and political polarization. By focusing on digital narratives, the study recognizes the power of women in leveraging online platforms to challenge and debunk denialist narratives, fostering a more inclusive discourse.

Due to the study scope, it has not been possible to expand the analysis to encompass how women's cyberactivists' narratives against environmental denialism are influenced by gender and feminism issues, as well as by the interaction of their followers. The understanding of this relation will opens avenues for intersectional analyses, contributing to a more nuanced understanding of the challenges faced by women activists in online spaces. Another relevant topic related to gender out of the study is about the online violence suffered by women cyberactivists countering such a sensible issue. Recognizing the potential for online violence against women cyberactivists, future studies could explore strategies to mitigate and address this issue. Addressing these limitations and leveraging the insights gained from this research can pave the way for more comprehensive, ethical, and impactful studies in the realm of cyberactivism, providing valuable contributions to both academic understanding and practical applications in the field.

We conclude that women cyberactivists' digital narratives in the context of environmental denialism on Instagram in Brazil goes beyond the traditional cyberactivism. They use robust narrative strategies to counter the rise of a complex movement that has strong impacts, especially for themselves, while facing a complex scenario in terms of being a woman activist. The creation and envisioning of new realities happen in the dialogue between them and their followers, and the success of their activism relies on their capacity of reaching and affecting their followers through their strategies, generating meaning.

References

Ae Chun, Soon; Luna-Reyes, Luis F.; Sandoval-Almazán, Rodrigo (2012). "Collaborative e-government". *Transforming Government: People, Process and Policy*, v. 6, n. 1, pp. 5-12. <https://doi.org/10.1108/17506161211214868>

Aguilar, Lorena (2008). *Is There a Connection Between Gender and Climate Change*. International Union for Conservation of Nature (IUCN), Office of the Senior Gender Adviser.

“ The creation and envisioning of new realities happen in the dialogue between them and their followers, and the success of their activism relies on their capacity of reaching and affecting their followers through their strategies, generating meaning ”

- Arruda, Isabela Lefol; Medeiros, Magno; Kelvis, Kátia** (2023). "Feminismo de hashtag: uma análise do ciberativismo de# JustiçaPorMariFerrer". *Em Questão*, v. 29, pp. e-125902. <https://doi.org/10.1590/1808-5245.29.125902>
- Band Jornalismo** (2018). "Bolsonaro: Vamos botar ponto final em todos ativismos do Brasil." Youtube. Last Modified 8 Oct 2018. <https://www.youtube.com/watch?v=MjUg2iydfzU>
- Barla, Josef; Bjork-James, Sophie** (2021). "Introduction: Entanglements of Anti-Feminism and Anti-Environmentalism in the Far-Right". *Australian Feminist Studies*, v. 36, n. 110, pp. 377-387. <https://doi.org/10.1080/08164649.2022.2062668>
- Björnberg, Karin Edvardsson; Karlsson, Mikael; Gilek, Michael; Hansson, Sven Ove** (2017). "Climate and environmental science denial: A review of the scientific literature published in 1990–2015". *Journal of Cleaner Production*, v. 167, pp. 229-241. <https://doi.org/10.1016/j.jclepro.2017.08.066>
- Bruner, Jerome** (1991). "The Narrative Construction of Reality". *Critical Inquiry*, v. 18, n. 1, pp. 1-21. <https://doi.org/10.1086/448619>
- Bruner, Jerome** (1996). *The Culture of Education*. Harvard University Press. <https://doi.org/10.4159/9780674251083>
- Clarke, Victoria; Braun, Virginia** (2021). *Thematic Analysis: A Practical Guide*. London: Sage. <https://uk.sagepub.com/en-gb/eur/thematic-analysis/book248481>
- Castells, Manuel** (2015). *Networks of Outrage and Hope: Social Movements in the Internet Age*. John Wiley & Sons.
- Castells, Manuel** (2020). "The Information City, the New Economy, and the Network Society." In: *The Information Society Reader*. pp. 150-164. Routledge. <https://doi.org/10.4324/9780203622278-17>
- Chon, Myoung-Gi; Park, Hyojung** (2020). "Social Media Activism in the Digital Age: Testing an Integrative Model of Activism on Contentious Issues". *Journalism & Mass Communication Quarterly*, v. 97, n. 1, pp. 72-97. <https://doi.org/10.1177/1077699019835896>
- Crenshaw, Kimberle** (1989). "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics". *University of Chicago Legal Forum*, v. 1989, n. 1, pp. 8. <http://chicagounbound.uchicago.edu/uclfv/vol1989/iss1/8>
- Diethelm, Pascal; McKee, Martin** (2009). "Denialism: what is it and how should scientists respond?". *The European Journal of Public Health*, v. 19, n. 1, pp. 2-4. <https://doi.org/10.1093/eurpub/ckn139>
- Fernandes, Carla Montuori; de Oliveira, Luiz Ademir; dos Santos Junior, Valmir Mendes** (2020). "Ativismo e Fake News nas Redes Sociais: o caso Marielle Franco". *Cadernos de Gênero e Diversidade*, v. 6, n. 2, pp. 196-216. <https://doi.org/10.9771/cgd.v6i2.34989>
- Fernández-Prados, Juan S; Lozano-Díaz, Antonia; Cuenca-Piqueras, Cristina; González-Moreno, María J** (2021). "Analysis of Teenage Cyberactivists on Twitter and Instagram around the World." In: *2021 9th International Conference on Information and Education Technology (ICIET)*. pp. 476-479. IEEE. <https://doi.org/10.1109/ICIET51873.2021.9419619>
- Franzke, Aline Shakti; Bechmann, Anja; Ess, Charles Melvin; Zimmer, Michael** (2020). *Internet Research: Ethical Guidelines 3.0*. AoIR (The International Association of Internet Researchers). <https://aoir.org/reports/ethics3.pdf>
- Geertz, Clifford** (1974). "From the Native's Point of View: On the Nature of Anthropological Understanding." In: *Interpretive Social Science*. Paul, Rabinow; William, M. Sullivan (Eds.), pp. 225-242. University of California Press. <https://doi.org/10.1525/9780520340343-008>
- Gerbaudo, P.** (2019). *The Digital Party: Political Organisation and Online Democracy*. Pluto Press. <https://doi.org/10.2307/j.ctv86dg2g>
- Gerbaudo, Paolo** (2012). *Tweets and the Streets: Social Media and Contemporary Activism*. Pluto Press. <http://library.oapen.org/handle/20.500.12657/30772>
- Global Witness** (2020). "Brazil." <https://www.globalwitness.org/en/all-countries-and-regions/brazil>
- González-Lizárraga, M; Becerra-Traver, Maria-Teresa; Yanez-Diaz, Mireya-Berenice** (2016). "Cyberactivism: A new form of participation for University students". *Comunicar: Revista Científica de Comunicación y Educación*, v. 24, n. 46, pp. 47-54. <http://hdl.handle.net/10760/29593>
- Habsari, Sri Kusumo; Rohmatin, Fatkhu; Istadiyantha, Istadiyantha** (2021). "Digital Ethnography of Social Media: Srikandi Sungai Indonesia Activists in Water and River Conservation". *Masyarakat, Kebudayaan dan Politik*, v. 34, n. 1, pp. 37-50. <https://doi.org/10.20473/mkp.V34I12021.37-50>
- Halupka, Max** (2018). "The legitimisation of clicktivism". *Australian Journal of Political Science*, v. 53, n. 1, pp. 130-141. <https://doi.org/10.1080/10361146.2017.1416586>
- Helgeson, Jennifer; Glynn, Pierre; Chabay, Ilan** (2022). "Narratives of sustainability in digital media: An observatory for digital narratives". *Futures*, v. 142, pp. 103016. <https://doi.org/10.1016/j.futures.2022.103016>

- Herman, David** (2002). *Story Logic: Problems and Possibilities of Narrative*. University of Nebraska Press. <https://www.nebraskapress.unl.edu/nebraska-paperback/9780803273429>
- Hine, Christine** (2000). "The Virtual Objects of Ethnography." In: *Virtual Ethnography*. Hine, Christine (Ed.), pp. 42-66. SAGE Publications. <https://doi.org/10.4135/9780857020277>
- INPE** (2019). "National Institute for Space Research." gov.br. <https://www.gov.br/inpe/pt-br>
- Kahn, Richard; Kellner, Douglas** (2004). "New Media and Internet Activism: From the 'Battle of Seattle' to Blogging". *New Media & Society*, v. 6, n. 1, pp. 87-95. <https://doi.org/10.1177/1461444804039908>
- Kaplan, Andreas M.; Haenlein, Michael** (2010). "Users of the world, unite! The challenges and opportunities of Social Media". *Business Horizons*, v. 53, n. 1, pp. 59-68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Kemp, Simon** (2022). "Digital 2022: Brazil." DataReportal – Global Digital Insights. Last Modified 9 February 2022. <https://datareportal.com/reports/digital-2022-brazil?rq=instagram%20brazil>
- Kozinets, R. V.** (2009). *Netnography: Doing Ethnographic Research Online*. SAGE.
- Kozinets, Robert V.** (2010). *Netnography: Doing Ethnographic Research Online*. SAGE Publications. <https://www.researchgate.net/publication/267922181>
- Kozinets, R. V.** (2015). *Netnography: Redefined*. SAGE.
- Krippendorff, K.** (2018). *Content Analysis: An Introduction to Its Methodology*. Sage Publications. <https://doi.org/10.4135/9781071878781>
- Laurel, Brenda Kay** (1986). "Toward the Design of a Computer-based Interactive Fantasy System (Drama, Playwriting, Poetics, Expert Systems, Theory)." Doctoral Dissertation, The Ohio State University. <https://www.proquest.com/openview/2e9191371f409f2186cbd8e57160d018>
- Menteş, Süleyman Ahmet** (2019). "Online Environmental Activism: The Case of Iğneada Floodplain Forest". *SAGE Open*, v. 9, n. 3, pp. 2158244019877877. <https://doi.org/10.1177/2158244019877877>
- Miguel, Jean Carlos Hochsprung** (2022). "A "meada" do negacionismo climático e o impedimento da governamentalização ambiental no Brasil". *Sociedade e Estado*, v. 37, n. 01, pp. 293-315. <https://doi.org/10.1590/s0102-6992-202237010013>
- Miller, Carolyn Handler** (2014). *Digital Storytelling: A Creator's Guide to Interactive Entertainment*. CRC Press. <https://doi.org/10.1201/9780429440045>
- Morgan, Mary S.; Wise, M. Norton** (2017). "Narrative science and narrative knowing. Introduction to special issue on narrative science". *Studies in History and Philosophy of Science Part A*, v. 62, pp. 1-5. <https://doi.org/10.1016/j.shpsa.2017.03.005>
- Morozov, Evgeny** (2009). "The Brave New World of Slacktivism." *Foreign Policy*. Last Modified May 19, 2009. <https://foreignpolicy.com/2009/05/19/the-brave-new-world-of-slacktivism>
- NESH** (2022). *Guidelines for Research Ethics in the Social Sciences and the Humanities*. National Research Ethics Committees. <https://www.forskningsetikk.no/en/guidelines/social-sciences-and-humanities/guidelines-for-research-ethics-in-the-social-sciences-and-the-humanities>
- Nogueira, Erika Cristina Dias; Câmara, Marco Túlio Pena** (2018). "The activist ethos on Facebook: A discursive analysis of the digital narratives of environmentalist women". *Calidoscópio*, v. 16, n. 2, pp. 206-215. <https://doi.org/10.4013/cld.2018.162.03>
- Nunes, Raul** (2020). "Outlining the history of cyberactivism in Brazil". *Internet Histories*, v. 4, n. 3, pp. 287-303. <https://doi.org/10.1080/24701475.2020.1769893>
- OECD** (2011). "OECD Statistics." <http://stats.oecd.org>
- Parent, Mike C.; DeBlaere, Cirleen; Moradi, Bonnie** (2013). "Approaches to Research on Intersectionality: Perspectives on Gender, LGBT, and Racial/Ethnic Identities". *Sex Roles*, v. 68, n. 11, pp. 639-645. <https://doi.org/10.1007/s11199-013-0283-2>
- Parsloe, Sarah M.; Holton, Avery E.** (2018). "#Boycottautismspeaks: communicating a counternarrative through cyberactivism and connective action". *Information, Communication & Society*, v. 21, n. 8, pp. 1116-1133. <https://doi.org/10.1080/1369118X.2017.1301514>
- Pires, Desirée; Castro, Amanda Motta** (2020). "Todo espaço é político: ativismo de mulheres nas redes sociais". *Revista Docência e Ciberultura*, v. 4, n. 2, pp. 143-161. <https://www.e-publicacoes.uerj.br/re-doc/article/view/49604>
- Sandoval-Almazan, Rodrigo; Ramon Gil-Garcia, J.** (2014). "Towards cyberactivism 2.0? Understanding the use of social media and other information technologies for political activism and social movements". *Government Information Quarterly*, v. 31, n. 3, pp. 365-378. <https://doi.org/10.1016/j.giq.2013.10.016>

- Sherer, Elizabeth** (2023). "Cyberactivism, Its Past and Its Future | Elizabeth Sherer". *Digital America*, n. 22. <https://www.digitalamerica.org/cyberactivism-its-past-and-its-future-elizabeth-sherer>
- Siliprandi, Emma** (2000). "Ecofeminismo: Contribuições e Limites Para a Abordagem de Políticas Ambientais". *Agroecologia e Desenvolvimento Rural Sustentável*, v. 1, n. 1, pp. 61-71. https://edisciplinas.usp.br/pluginfile.php/4422099/mod_folder/content/0/ecofeminismo%20.pdf
- Spradley, James P** (2016). *Participant Observation*. Waveland Press. <https://www.waveland.com/browse.php?t=689>
- Strapko, Noel; Hempel, Lynn; MacIroy, Kelsea; Smith, Keith** (2016). "Gender Differences in Environmental Concern: Reevaluating Gender Socialization". *Society & Natural Resources*, v. 29, n. 9, pp. 1015-1031. <https://doi.org/10.1080/08941920.2016.1138563>
- Torezan, Isabela** (2022). "Justiça climática pelos direitos das mulheres." *Global Voices em Português*. Last Modified 30 March, 2022. <https://pt.globalvoices.org/2022/03/30/justica-climatica-pelos-direitos-das-mulheres>
- Universitat de Barcelona** (2020). *Codi d'integritat en la recerca de la Universitat de Barcelona*. Edicions Universitat Barcelona. <http://www.edicions.ub.edu/ficha.aspx?cod=11636>
- Vélez-Duarte, Cristian Paúl; Calva-Cabrera, Ketty Daniela; León-Alberca, Tatiana Betzabé** (2022). "Political cyberactivism on Twitter: Case study of the first round of the last presidential elections in Ecuador." In: *2022 17th Iberian Conference on Information Systems and Technologies (CISTI)*. pp. 1-6. IEEE. <https://doi.org/10.23919/CIST154924.2022.9820441>
- Vervoort, Joost M.; Bendor, Roy; Kelliher, Aisling; Strik, Oscar; Helfgott, Ariella E. R.** (2015). "Scenarios and the art of worldmaking". *Futures*, v. 74, pp. 62-70. <https://doi.org/10.1016/j.futures.2015.08.009>

Annex

Table 11: Research Ethics.

Topic	Concepts	Ethical issue applied in the research
Private vs public	Differentiating between the private and public spheres can be challenging, especially when researching or interacting online. Researchers should be mindful that individuals' perceptions of privacy and publicity on such platforms can vary when utilizing materials from these interactions (NESH, 2022).	Only Public Profiles Analyzed Although there is no consensus about Instagram data being public or private, all data collected and analyzed were from Public Profiles, as named by the platform.
Informed Consent	While obtaining free and informed consent is typically the standard practice, exceptions may apply in certain situations. These exceptions can arise when the research does not involve direct contact with participants, the data being processed is not highly sensitive, and the research's overall benefits clearly outweigh any potential drawbacks for the individuals involved (NESH, 2022).	No Informed Consent Obligatory As a non-participatory study, it does not imply direct contact with the participants.
Privacy	Public figures, who willingly seek or hold positions involving public attention, may face challenges to their individual freedom due to increased scrutiny. However, their level of freedom being threatened is not comparable to that of other individuals. Public figures should anticipate that the public aspects of their work will be subjected to research (NESH, 2022).	Images and quotes exposed in the study only come from verified accounts and were anonymized. Images and quotes from non-verified accounts were included in the analysis but were not exposed in the article, which only used the aggregated and coded data derived from the netnographic observation. We removed any identifying information such as usernames, profile pictures, location tags, and any other details that could reveal the identity of the user to favor traceability or identification.
Risk of Harm	Research holds value, but it carries the potential for harm. Responsible research involves evaluating unintended and unfavorable outcomes. Researchers have the responsibility to ensure that their work adheres to legal and regulatory frameworks, and does not pose risks to individuals, society, or the environment. This commitment aligns with the principles of sustainability and precaution in research ethics (NESH, 2022).	No Risk of Harm The data collected and used does not present any potential risks of harm for the individuals and groups involved directly or indirectly.