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It's Time to See the Forest for the Trees – Rhetorical Argumentation about Forest Use on Twitter

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Twitter¹ used to be a hotbed of topical societal debates. In this paper, we analyze discussions about Finnish forest use and conservation on Twitter during a five-month period in 2020–2021. By looking at the factual contents and the ways claims are justified, we ask how tweeters construct their arguments. The materials were analyzed by paying attention to background categories, content topic and style, and any additional information brought up by participants. Our findings show that a polarization between economic and ecological worldviews can be seen in Twitter debates, and that the participants use various methods to justify their stances. As a result, we also identified ways in which ordinary people take part in this debate by commenting, reframing, retweeting and sending their own photos as evidence.

Keywords: Argumentation, forest, rhetorics, Twitter

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¹ In 2022, Twitter was bought by Elon Musk, who later changed its name to “X.” This research was conducted before these changes, and thus we use the original name.

1 Background and Aims

During the last few years, forests have been of increasing interest to legislators, the European Union, industry interest groups, and private land owners, due to their role as carbon sinks, sources of economic income for private people, as well as their relevance to industrial changes and biodiversity, to mention but a few. In this paper, we analyze Finnish public discussion on these topics.

Previous research has identified and classified stakeholders of forest debates (Haugen 2015), the attitudes of different stakeholders towards forests (Lindqvist et al. 2011), and the thoughts of the general public concerning clearcutting (Bliss 2000). The underlying values – ecology and economics – in the forest management for sustainable development and natural resources issues have been identified in studies early on (see Toman & Ashton 1996), and they have been studied e.g. in the context of different countries (Kant & Lee 2004; Lim et al. 2015), sustainability in terms of forest management (Kant 2003) and, especially, in relation to the climate (Eriksson 2018, André et al. 2017; Laakkonen et al. 2018). Some aspects of the Finnish forest discussion, and its responsibility (Volmari 2009) and environmental talk (Takala et al. 2019) have been studied before, but these studies have focused on the rhetoric of forest industry and environmental organizations, while the main focus of this study is on the public debate on social media. The purpose of this study is thus to contribute to a more nuanced understanding of the online discussion about forest issues, and the ways in which the different actors (e.g., representatives of corporations, public administration, media, and lay people) interact with regard to the environment and societal influence. The empirical material is from a five-month time period in 2020–2021 when forests were a heated topic in Finnish Twitter debates.

The aim is to find out how the participants are using their voices and what themes they concentrate on in order to make claims and arguments heard and convincing to the implicitly or explicitly chosen audience. Theoretically, the paper draws on the dimensions of rhetorical argumentation. We identify central issues of concern and analyze the argumentation from a rhetorical viewpoint. The arguments of both organizations and individual actors are meaningful in the context and ideological structures (ideology of economic growth or forests in an economic sense, and forest conservation), where they are used for justifying actions. This study also explores what kind of themes are manifested in the forest discussion and what kind of parallel themes and argumentative rhetorics are used for legitimating claims made by the speakers.

2 Public Argumentation and Social Media

In this section, we will outline the concept of argumentation and present our approach to it. Next, we will present previous research about Twitter, and its significance to social researchers. Finally, we will introduce the context of our study, the Finnish forest debate.

2.1 Argumentation

Argumentation aims to convince the listener, often the opponent or opponents, of one's premises and to show how one is reasoning from those (Zarefsky 2014: xvi). Here, we are interested in public argumentation, and specifically rhetorical argumentation (Perelman & Olbrechts-Tyteca 1951), which often deals with contemporary political issues and takes place in various forums. Social media has opened the political arenas of argumentation for wider audiences compared to traditional voices of, for example, politicians and representatives of industries (e.g. Zenker et al. 2023). However, these latter groups that had a voice already in the traditional media, also participate in public discussions and argumentation in various social media, such as X (formerly Twitter), Facebook, Instagram, and Tiktok.

Central for successful public argumentation is the means of making the argument reliable and appealing; in social media speed and brevity are particularly important, whereas following a logical structure is not necessary (see e.g. Lytos et al. 2022). In order to strengthen or rationalize one's argument, different rhetorical tools are used instead of aiming toward *logical* argumentation with clear or explicit premises. In certain heated public debates, where facts, values, and feelings are mixed, rhetorical argumentation becomes crucial as social media pushes speakers to 'take sides' and to attempt to persuade others on 'their side' – the counterpart can also be imaginary or absent from the social media platform or discussion. The Finnish forest as a societal topic offers fruitful debates where such dimensions can be analyzed. The nature of the argumentation affects how, for example, Twitter data can be analyzed. Rhetorical forms of persuading the listener – the uses of *ethos*, *logos*, and *pathos* – can be detected also in brief and limited forms of communication, such as tweets (Auger 2014). Ethos, logos, and pathos are Aristotle's original concepts referring to (in the same order) the speaker's position in listeners' eyes, to the rational content of what is said, and to the emotional content.

Kock (2013) emphasizes the theme as a central factor in rhetorical argumentation. For Finns, the forest as a theme is not only emotional, but also material, especially in an economic sense. Emotional (*pathos*) and material (could be understood as *logos*) overlap strongly in forest argumentation and bring forth different world views, beliefs, and

knowledge (Wahl-Jorgensen 2019). In public argumentation, these differing perspectives often collide. In addition, specific worldviews, beliefs, and knowledge are often associated with specific institutions and organizations, such as those focused on ownership, industry, and geographical and educational positions (widely referring to ethos, or in other words authorities). Even if the length of a tweet seems short for argumentation, it may still be argumentative when representing an individual speech act packed with content (e.g. Elliott-Maksymowicz et al. 2021).

The rationality of arguments and their premises is a popular claim in social media debates, because rationality is considered convincing and worth aiming at (Kelly et al. 2017). The forest debate is an illustrative case of a social media debate where rationality – and the claim of it – meets emotional and moral arguments. Whereas the speakers tend to refer to only one aspect, in reality, rational, emotional, and moral aspects overlap. In general, debates over people’s living environments, land, and property tend to become battles over what types of knowledge and rationality are proper. (Collier & Scott 2017.) For example, Rydin (2003) divides these types into scientific rationality, economic rationality, and communicative rationality. In the forest debates, these rationalities become simultaneous and create the peculiar rhetoric used for arguing on one’s or one’s reference group’s opinions or interests. According to Nancekivell et al. (2019) understanding ownership is based on a naïve theory of ownership where owner and property are differentiated. This has ontological effects on how understandings of, for example, ‘forest as property’ or ‘forest as nature’ are conflicted in debates.

Social media has offered the possibility to wider audiences to participate in new ways in everyday political debates. Networks and bidirectional communication have, at least theoretically, made policymaking more bottom-up compared to traditional top-to-bottom media. This can be positively understood as democratizing debate and knowledge but it has also undermined for example the belief in scientific expertise (Krick & Meriluoto 2022). The democratization of knowledge and expertise also can cause disorder in situations where coherent and weighted knowledge is crucial, such as in the case of COVID-19 (Camporesi et al. 2022).

We look at the Finnish forest Twitter debate from the perspective of rhetorical argumentation. Rhetorical argumentation, as discussed here, is concerned with ‘the relationship between arguments and audiences, and deals with how people are induced to believe a statement’ (Zarefsky 2014: xvi). Through analyzing comprehensive data, we discuss the nature and relations of the expected knowledge and know-how presented in the tweets. Methodologically, we observe tweets as texts situated in the contexts of links, images, hashtags, and mentions.

2.2 Previous Research on Twitter Debates

Twitter is a micro-blogging platform that enables users to post short messages, known as ‘tweets,’ which were previously limited to 140 characters but have been extended to 280 characters in most languages since 2017.² Once posted, tweets are automatically distributed to the user’s network of followers and can also be seen by anyone using the web or a Twitter application, unless the user has set their account to private. Tweets on Twitter can also be replied to, explicitly flagging conversation participants, or retweeted, which means sharing the tweet to one’s own followers. Thus, Twitter is a platform where a diverse range of individuals can engage in discussions related to topics that hold personal significance for them. Furthermore, Twitter has become an important tool for disseminating scientific knowledge to a wider audience. The platform has provided an opportunity for the general public to participate in discussions about science and technology-related issues, thus facilitating greater engagement and understanding of these subjects. (Darling et al. 2013; Fownes et al. 2018; Agnihotri et al. 2022.)

Twitter has the potential to merge distinct audiences, those who engage in political discourse and those who use the Internet for entertainment (Ngyuen 2011). In addition, experts, influential leaders, and laymen (deRosa et al. 2021), may form a cohesive group. Further, Halpern et al. (2017) found that sharing political information through social media leads to higher levels of participation, a conclusion that aligns with earlier research on the democratizing potential of Twitter and other microblogging platforms (Murthy 2012). These platforms allow ordinary citizens to break news, create media content, and share their opinions publicly, contributing to a significant shift in power dynamics and the ability of individuals to influence public discourse.

Twitter’s popularity, and also its popularity as a research topic, may be attributed to the attention it has received from mainstream media. Furthermore, Twitter has widely been used by journalists to identify newsworthy events and to distribute breaking news. In contrast to Facebook, it could be argued that Twitter garners more media attention due to the fact that celebrities, politicians, and sports stars frequently tweet about current events. Additionally, controversial tweets often make headlines, further contributing to Twitter’s visibility in the news. (Ahmed et al. 2017.)

When it comes to acquiring research materials, Ahmed et al. (2017) have summarized the reasons for Twitter’s popularity among researchers: its cultural status, search and

² After the sale of Twitter to Elon Musk in 2022, even longer messages have been allowed for paying users.

hashtag features, easy data retrieval, open API for accessible tools, and researchers' personal experiences using the platform. By capturing tweets over time, researchers can gain insight into how an issue evolves and changes longitudinally (see also Roberts et al. 2019). In addition, social media platforms like Twitter are increasingly recognized as valuable sources of information regarding the societal context and functions of forests (Daume & von Gadow 2014). Bogdanou et al. (2013) argue that social media provides a means for the forest industry and related stakeholders to communicate and influence the general public.

2.3 The Context: Finnish Debate on Forest Use and Conservation

In the Finnish setting, forests are currently framed within the context of 'bioeconomy' (Finland and EU) – that is the way that bio-based products are used as a solution to moving beyond a fossil-based economy. The use of forests as such has not, however, changed: pulp, paper, and a small amount of 'innovative' products are still the main endpoints of logging. The legitimation work related to this progress, and the reconciliation of contradictory values, is done on the grassroots level.

Previous studies (see e.g. Toman & Ashton 1996, Halla et al. 2019, Karppinen et al. 2020) have identified diverse values in the forest issues and noted that, as a result, there are conflicts of opinion, which have often been interpreted as confrontations (Mäntyranta 2020). In public, the different parties strive to promote their own positions and bring out their experiences from their own point of view. However, the economic value of forests has a central role for Finns on a more personal level, in the form of unquestionable private ownership. Takala et al. (2017) identified that economic interests and utilization are central factors in the Finnish forest ownership. The economic approach manifests itself both in pro-utilization and in critical, often conservationist, ways. These findings resonate with the history of Finnish forest industry logic and the struggles over nature conservation.

3 Materials and Method

The empirical materials for the study were collected from Finnish Twitter debates on forest issues during the time period of 1.12.2020–30.4.2021. All the tweets including the word 'forest' (*metsä* in Finnish) were collected from the Twitter API via Postman query.

In the first stage of analysis, the resulting material (16 950 tweets in JSON files) was organized into Excel-categories by date and time sent, sender, reactions, and the content. In order to get an overview of the debate, the number of unique tweeters and the

most active tweeters were identified. Further, the tweets and subsequent replies/re-tweets that attracted most reactions (likes, comments, or retweets) were identified; in the second stage, these 450 tweets were analyzed qualitatively.

Our qualitative analysis draws from the ideas of argumentation on 'themes' (Kock 2013), and the argument structure relying on the social dimension of argument (Tindale 2015; Tindale 2013). This means that in order to understand *the issue in dispute* in argumentation and the ways in which it is *expressed in the shared environment* by using words and/or images, we will analyze the individual tweets by their topic claims (what it is 'about', to which larger issue it belongs, and what stance it takes in relation to that) and the support they offer to these claims (in a form of factual or other further information) (see also Kock 2013; Tindale 2013).

Thus, in the second stage, we analyzed the content of the selected 450 tweets and the ways in which their central argument was supported/justified (with links, images, etc.), in order to display the elements of argumentation. Finally, to exemplify the argumentation in different categories, we chose 18 individual tweets to represent the in-depth analysis.

In the first, quantitative stage, then, the unit of analysis was the number of tweets and the sender of the tweets, as well as the time they were sent. In the second stage, in contrast, the unit of analysis is the content of the tweets, more specifically the argumentative categories present in them.

4 Analysis

4.1 General Description of the Forest Debate

We began our analysis by looking at the number and background of the participants. There was a total of 6265 unique senders during the selected time period. 5658 of them had tweeted less than five times. We then picked all the 95 most active users (they sent/commented or retweeted more than 20 tweets) and classified them according to their primary background positions (as stated in their Twitter profile). The percentage of the positions is presented in Figure 1.

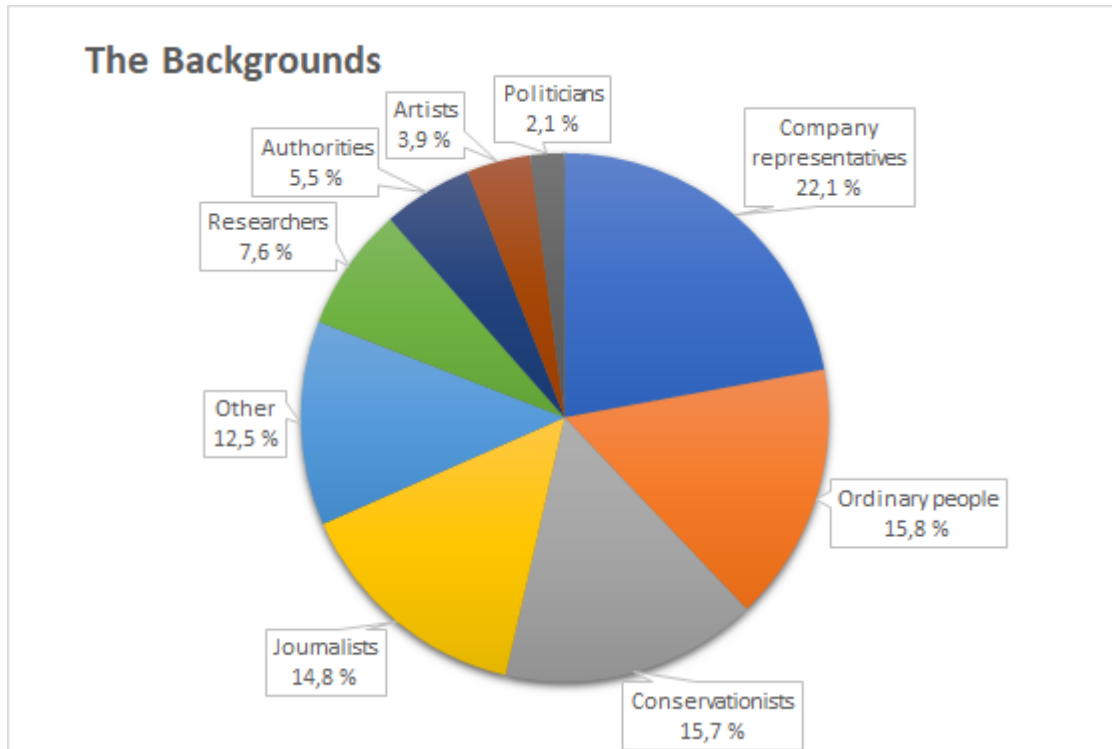


Figure 1. The backgrounds of the tweeters.

The largest category of the most active tweeters is that of “company representatives”, which include managers or other representatives of forest industry organizations. The second largest group is “ordinary people”, who take part in forest conversations, either by posting their own content (texts, pictures, or links) or commenting or retweeting topical posts. The “conservationists” form the third-largest group. These are representatives of nature conservation organizations (such as WWF or Greenpeace), activists, or other people, who have mentioned a connection to conservation in their profiles. The fourth group is “journalists”, which refers to representatives of traditional media outlets.

The fifth-largest group is “other”, which contains users who have not announced any specific information of their background, or the information is not relevant here. The sixth group is “researchers”, most of whom have announced their affiliation, university or research institute, in their account profiles. The seventh group, “artists”, contains mainly photographers, who post their images on Twitter. The eighth group is “authorities”, that is experts and governmental officials in ministries and state enterprises. Finally, the last group is “politicians” which consists of elected politicians, former or active, on the local, national, or EU-level. Although some users could have been categorized into more than one background group, for the sake of clarity, only one “main” category was used for each tweeter in this study.

After the categorization of the most active tweeters, we moved on to identify the peak periods where the forest-related tweeting was most active. This was done from the dataset of 450 tweets that gathered the majority of public attention. This also allowed us to retrieve the most popular topics within the broad forest issue, as the most active periods were centered around four topics: a) the documentary of primeval forests (in December 2020), b) the *Suomen Kuvalehti* cover story about clearcutting (in February 2021), c) news about a license granted for a new bioproduct mill in Kemi (in February-March 2021), and, finally, the d) discussion about the EU forest strategy in March-April 2021.

The main focus of the analysis is the individual tweets, not the whole chains. Sometimes real debate sparked not from the opening tweet, but from some reformulation or re-framing of it in the form of a retweet. In these cases, we will make note of whether the example is not an 'original opening tweet', but a retweet. The original tweeters are mainly serious but there are some irrelevant, inappropriate, or trolling debates in the tweet chains. Further, in order to analyze the contents, we selected the individual tweets that got the most reactions (at least 50 likes, comments, or retweets) for further investigation; and thus formed a sample of 450 tweets. Next, we will present the 18 examples, which best represent the whole sample and the different categories that are present. We analyzed both the topic claims of these tweets—what they are "about," to which bigger issue they belong, and what position they take on it—as well as the evidence—factual or other—that the tweets provide to bolster these claims. We have combined the findings into five categories. The examples were translated into English, and the names of the tweeters and other personal identifiers were removed.

4.2 Results of the rhetorical analysis

In this section, we will show the ways in which rhetorical argumentation is constructed in the Twitter debate. Our results are presented in the following way. First, we pay attention to the (implicit and explicit) expressions of rationality, both in the speaker's own and in the judgment of others' claimed ideology and worldview. Secondly, we look at the additional information given (by links to newspaper articles, research reports, etc.). We then move on to observe the linkage to topical political issues and policy-makers. Then we show the ways in which images were used in the conversation.

Ideology and rationality

One way of questioning opposing views by other participants is to blame them for their 'ideology', and, especially in a way that some claims are rooted in an ideology, instead of rationality. This claimed ideology is often something that is outdated (like the pro-

Soviet era of transmission in the 70's and 80's). In Example 1 (which was the tweet that gathered the most reactions in all our material), the participant is using an accusation of bias to justify their opinion about the *Yle* documentary on the state of the Finnish primeval forests, and addresses it to *Yle*'s (The Finnish Public Service Media Company) CEO:

- (1) Since the #YLE Moscow correspondents in 70s and 80s, I haven't seen a more biased thing than the #Suomalaisetikimetsät [Finnish primeval forests] program that just ended! What a flop! @merjaya

Then again, claims of rationality can appear in a form where economic rationality is seen as the only right way, whereas other rationalities are 'just bad options':

- (2) In the midst of all this racketing about forests and nature, it should not be forgotten that the wise use of natural resources means a livelihood and a better climate. Finnish forestry is undoubtedly the world's number one level. Trees are not cut and peat is not lifted out of malice, but because the other options are bad.

Right to speak and the proper way of participating

One typical feature of online discussion is 'metaconversation' – talk about who has the right to participate in a particular conversation, as well as beyond, and in what ways the participation should take place. One way of criticizing opposing views is painting them as irrelevant based on characteristics of the people expressing them. In Example 3, ownership is represented as a boundary mark, meaning that only those who actually own forests (or have invested in them) should get their voices heard:

- (3) Those, in the forest debate, who are the loudest, most active and edgy, and most willing to decide are those who don't own the forest and don't have a penny attached to the forests,...
REF TO: <https://www.maaseuduntulevaisuus.fi/metsa/00889ddf-327e-5ae8-83cf-19a3f3e710fb>

This kind of questioning of someone's right to speak can also involve bringing up *other* issues the other parties should rather be concentrating on. In Example 4, the tweeter suggests that the Greens are not qualified to speak on the forest industry as long as a completely unrelated environmental problem, namely dumping dirty snow in the sea in Helsinki, has not been solved:

- (4) Dirty snow is thrown into the sea in Helsinki. The Greens remain silent. Why? They give advice to forest professionals about forestry, but can't handle the pollution in their own city! What kind of a #natureconservation party is this? #greens @MariaOhisalo #Helsinki #forest

Knowledge and sources of information

Showing expertise, both 'knowledge' and 'know-how', is done by appealing to some external source, and this source of information is then put under scrutiny. The sources

referred to are manifold, and include governmental reports and reviews, research publications, news articles, and quotes of single persons who are considered authorities in the field (understood to cover anything from biology to economics).

In Example 5, the source used to support the use of forests in an economical sense is a private forest management consultancy, Tapio, which has over one hundred years of history in Finnish forest management.

- (5) Did you know that the output of the #forestbioeconomy in Uusimaa and Central Finland is both over EUR 2,800,000,000? Or that the #valueadded of forest bioeconomy grew by 21% between 2011 and 2018? Thank you to @metsasaatio and @TAPIOForestry for the Metsäbiotalous maakunnissa [regional forest bioeconomy] report. REF TO: <https://tapio.fi/projektit/metsabiotalouden-arvoketjut/metsabiotalous-maakunnissa-raportit-ja-esitykset/>

However, the value of the reports and suggestions from different government offices can also be questioned, like in Example 6, where the five-year plan to protect the primeval forests is criticized as an unrealistic myth:

- (6) I have reservations about all kinds of programmes drawn up by the head office. The five-year programme was like that. My point is that the whole term 'old forest' is a romantic myth. We all want to go to the old-growth forest and protect it - most of all those who never visit any forest.

Example 7 is a direct answer to Example 6, and it argues that even though some ideas are 'romantic', they can still have roots in biological facts, and thus, should be taken seriously:

- (7) An 'old forest' may be a romantic idea, but the forest in which diversity has been deposited for a long time is not a myth, it is about biological facts. An old-growth forest, on the other hand, is a different matter. There are few of them in Finland, and the protection of those few is important, but not the only thing in forest protection.

Another example of bringing up sources of information is the use of statistics to support one's claim. In Example 8, this is done in a clarifying and supporting comment to a previous tweet, which implies that the ideas for forest conservation are somehow outdated:

- (8) Here's the state forest inventory data from the 2000s that the legendary explainer is looking for. [Refers to statistics on forest age groups in Finland 1996-2003 ->2015-2019 based on national forest inventory.]

COMMENT TO:

- (9) Luckily, there is a legendary Nature Evening Man! [Nature evening is a radio programme that has run since 1975, and the referred person acted as a specialist in the programme for decades. Recently he has published several newspaper columns that question the need for the protection of nature.]

National politics

Since forestry and bioeconomy constitute a significant part of the Finnish National Economy, they have also been central topics in political debates. The fluctuations of trade trends and the decisions regarding industrial sites have been and are being praised, judged and ridiculed from all political sides, and depending on who is holding the power seat:

- (10) You most likely remember that when UPM closed the Kaipola plant, economic influencers criticized Finland's tax and wage policy heavily. Now that Metsä Group is opening a new mill in Kemi, you would think they would take turns praising the government's economic policy?

Political differences are also brought into the arena by publicly judging reforms suggested by green ministers. This is part of the larger pattern of criticizing the Green Party – and beyond party politics, the environmental movement – of their statements about natural resources and the economy. Here a forest industry leader specifically targets Ohisalo by stating that the plans to restrict the cuttings are not supported by research:

- (11) Chairperson @MariaOhisalo would reduce logging without taking a position on its relocation [elsewhere in the world]. In Finland, logging responds to global product demand and at the same time creates work/income. She would also like to put an end to clearcutting in state forests, even though research does not support it.

REF TO: <https://www.maaseuduntulevaisuus.fi/uutiset/d549a2f4-0ad7-5972-ae44-8c0a4daf7d2b>

When the information about the license granted to the new 'Bioproduct' mill was published, the news was loudly and broadly celebrated by both industrial and political key figures:

- (12) Big decision! The largest forest industry investment ever made in Finland. Hurray, Metsä Group, hurray, Finland! From this we rise.

REF TO: Metsä Group press release on Kemi bio product mill investment.

- (13) Metsä Group's new mill in Kemi is the best news in a long time. This is what we have been waiting for in Sea Lapland! 🙌😊 This largest investment in the history of the forest industry, EUR 1.6 billion, will put the whole of Finland on its feet. Where to get all the skilled workers is now the most positive problem in the region! @MetsaGroup

In a heated political debate, the participants sometimes use strong language and terms like 'lying' and colloquial phrases when expressing their anger towards the system:

- (14) The Finnish forest industry is a fraud. We have been lied to that things are done sustainably, but 74% of endangered forest species are endangered because of the forest industry. The people who are warming up our society are now one by one revealed to having pissed into our common pants in freezing temperatures.

In addition, when it comes to political strategies (e.g. the EU forest strategy, that was being prepared at the time), the writers can quickly express their frustration towards policy-makers by referring sarcastically to a ‘surprise’:

(15) Surprise surprise! After all, Finland is there again undermining the fight against biodiversity loss and the climate crisis. According to Finland, the forest strategy focuses too much on the protection of carbon sinks and biodiversity. #luontokato #ilmastokriisi #ilmastohallitus #metsä #monimuotoisuus #luonto

REF TO: original referred document: <https://data.consilium.europa.eu/doc/document/ST-6644-2021-INIT/en/pdf>

Showing evidence with images

A relatively big part of our materials consists of tweets where an individual (most often an ordinary citizen) posts a snapshot of their walk or trip to the forest with an accompanying message of how ‘forest nurtures one’s soul’. Example 16 was posted on the International Forest Day, and it also implicitly refers to another peculiar trait in the Finnish system: you can make a fire in a forest you own (this is prohibited in the Everyman’s rights³):

(16) Forest relaxes, forest calms, forest refreshes, you keep fit in the forest and you can grill sausage in the forest. People, go to the forest. #worldforestday

REF TO: Own photo in the forest, camp fire.

An example of grim evidence and mockery, is the case of the cover picture in the *Suomen Kuvalehti* magazine in February 2021. The cover story was about the miserable state of forests in Finland, and the image was of a scenery after clearcutting. Interestingly, the first tweeters were questioning the ‘reality’ of that image, their claim was that it was a cherry-picked bad example that is hard to find in actual forests (see Example 17).

(17) How close is the collaboration of @SuomenKuvalehti magazine and conservation organizations, since the cover image is the same as a campaign photo? Obviously, the magazine is no longer neutral, reliable or objective?? The image does not reflect the actual reality in our forests!

REF TO: Screenshot of Suomen Kuvalehti 10/2021 cover.

That inspired an active tweeter to post their own response, in which they attached their own image to support the original news article, and show the actual reality:

³ “Everyman’s rights are traditionally understood as the right to move about, stay and temporarily camp on another’s land and utilise certain natural products there without the consent of the landowner.” (Ministry of the Environment 2015.) <https://ym.fi/virkistyskaytto>

- (18) Again, a forest industry person got anxious when the cover of the magazine 'does not correspond to reality.' Could we get some more pictures of what the #clearcutting reality is? In southern Finland, the surroundings of the #metso [Tetrao urogallus] lek has been fully cut. Tetrao urogallus is endangered by area. #forest
REF TO: Clearcutting photo taken by the tweeter.

Consequently, this image and the request for more pictures stimulated several participants to post their own images of clearcut forest land from all around Finland.

5 Discussion

Popular themes in the Twitter forest discussion are economy, climate, private ownership, and its central value. The speakers of 'forest Twitter' often implicitly refer to rationality and knowledge. However, the meaning of rationality and knowledge differs radically between the speakers, and direct references to biology or other relevant natural sciences are used by certain groups only, such as conservation advocates or those speaking for alternative forest management models. This is one of the central debates, for since the 1950s, one model of forest management has been hegemonic (Siiskonen 2007). This regulation changed only in 2014 (Oksanen 2014). Hence, rationality in forest discussion becomes shaped by the background beliefs whether these beliefs are relevant for the discussed issue or not. In extreme cases, everyone's rationality can be 'true' at the same time if it is true enough for the speaker. Equally, the question of 'ownership' is often mixed with the idea of knowledge and knowhow, especially in the arguments of those who represent the industry (directly or indirectly) or customary ways of forest management.

The one central topic in Twitter forest debates is cuttings, widely understood: It was present in debates concerning a certain project, certain new industrial site, a policy release, a study release, a decision of protected area, and even a television documentary. The forest debate is constantly ongoing but certain events result in high peaks.

In sum, the analysis shows that although the topics in the debates are not dependent on political views, the participants' arguments represent different values and worldviews. If we categorize the participants as environmentalists and industrialists, we can extract a central difference: Environmentalists argue for the *collective good* involving future generations and nature and climate as such, whereas those representing industry and the economic perspective argue for the *individual good*, such as the private ownership and individual rights. This generalization reveals that forest argumentation on Twitter often includes the audience already within the argument through implicit or explicit reference to values and belief structures (Tindale 2013). This can be seen also in forest debates in Finland beyond Twitter.

Social media, such as Twitter, offer an arena for people from all kinds of backgrounds. The level of their participation, as well as the attention they receive, is varied, and is also dependent on their previous activity and formerly built community. However, by participating in the debate about a topical issue, e.g. by retweeting or commenting on popular tweets or using trending hashtags, anyone can give their opinion and try to make their voices heard. And, sensitive issues, such as the Finnish forest, also invite people to share their *feelings* on the matter at hand. In our materials this was visible in the large number of individual snapshots related to forest experiences. These images, with the hashtag #forest, usually gained a lot of likes. This can be interpreted as one sign of the deep personal bond that the Finns are said to have with the nature and forests.

6 Conclusions

The relevance of Twitter debates to both participants and researchers is limited by what kind of people use Twitter and which of them are so interested in forests that they want to take part in political debates on the issue. Roughly, the most important group is those acting in different managerial positions in forest industries and interest groups and communicating in social media as it is a common communication strategy in many public and private organizations: making their staff tweet. Other important groups are the miscellaneous group of researchers studying forest-related topics and lay people interested in forests. There are common nominators that we have analyzed above by identifying and classifying the types of rhetorical arguments used in tweets in the context of the Finnish forest debate.

The tweeters in the data appeal to the rhetorical form of rationalising their argument: Rationality has traditionally been an important claim for Finns (see e.g. Seeck & Eräkivi 2008) in any debate and 'ideology' is seen as its counterpart. As well as in the debate over economy, also in the forest debate participants tend to identify themselves as rational, as pure from ideology, and the real or imagined opponent as irrational and ideological.

This rhetoric of *rationality* is closely related to the question of *democratization* of public debate. In the analysis, the demand and questioning of democratization manifests itself in claims of which sources should be used and on which occasions. The question of what is knowledge in the forest debate is tied to the question whether the speaker is considered knowledgeable enough to participate. There is a strong quest for the right to speak in the Finnish public debate. However, in the forest debate, it is regularly questioned who has the *right to speak* about forests. The right to speak on the issue manifests itself also in claims of which topics should be discussed and by whom. National politics is an

issue that causes confrontations and overstatements but is still widely discussed for example in social media. For example, in the case of forests, reference to *national interests* is popular. In addition, *justification with evidence* is a multifold way of building an argument: it can include self-taken photos as well as references to those that are considered an authority.

Along the lines with Ahmed et al. (2017) and Fellenor et al. (2018), we also found a two-way relationship between tweets and traditional media, involving interaction of different forms of media (print and TV media), political statements, and user content. The users of Twitter did not only, or inactively, receive messages from definitive sources and pass them on, but also engaged in a debate by endorsing or challenging the original content or media frames. And, on the other hand, debates that occur on Twitter, are often referred to in the traditional media. The manifold intertwining of multiple types of media was clearly present in our analysis, when the *Yle* documentary sparked a heated, widely commented conversation, it was picked to make headlines in the *Helsingin Sanomat* newspaper, which then drew a lot of reader comments. In these debates, the complexity emerges when various participants from different backgrounds build their arguments on numerous sources and beliefs that clash.

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