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## The NORAD discussion on Twitter: analysis of themes, trends and social relationships

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Key military officials in both Canada and the United States have recently raised the necessity to modernize strategic continental defence institutions to confront a new geopolitical environment and emerging threats. We will leave it to strategic studies experts to analyze whether these calls are indeed warranted<sup>2</sup>.

Beyond strategic considerations, it is important from our perspective to take stock of the nature and the intensity of the public discussion on the future of NORAD. Mathieu Landriault has analyzed the state of the NORAD discussion in traditional media and in parliamentary committees. These two forums are strongly influenced by a filtering effect, where journalists (for the former) and Members of Parliament (for the latter) decide who is entitled to voice their opinions or be allocated space or time. Social media, on the other hand, allows for broader participation in public discussions. Further, online platforms have become the main source to acquire information about news and current affairs for Canadians<sup>3</sup>. It is thus imperative to map out how issues of public interest are represented on social media. For our purpose, we want to analyze if the NORAD discussion on Twitter differed from the conversation held in traditional media and on parliamentary committees.

Additionally, we advance that analyzing social media brings forth novel analytical opportunities. For example, the popularity of specific ideas can be assessed by looking at how often these ideas were relayed or liked by other users (by retweeting or liking their posts, or mentioning them). Moreover, studying these practices leads to efficient and useful mapping of policy networks including participants from different backgrounds (scholars, civil society, bureaucrats, governmental departments, etc.). We will provide evidence documenting the policy networks on Twitter which discuss and exchange on the future of NORAD.

## Methodology

Our analyses were conducted using the R language. Using the package *rtweet*<sup>4</sup>, we proceeded to extract all tweets that mentioned the account @NORADCommand (the official NORAD twitter account) and those that included the hashtag #norad (the most commonly used hashtag to refer to NORAD-related subjects) spanning a period of one year, from June 6, 2019 to June 6, 2020 (starting from the latter which is the day we started to conduct our analysis, and moving down, or backwards, to the former). We could not extend our collection of tweets to more than a year due to Twitter's API server's limitation. In total, we collected 24,203 tweets mentioning @NORADCommand and 11,321 tweets including #norad. Keeping in mind that accounts which mentioned @NORADCommand might have also added the hashtag #norad in their posts, we checked for a possible overlap between both corpora. Our analysis shows that only 4% of the tweets we collected did indeed overlap between both corpora.

Once the tweets were extracted, we produced network graphs to illustrate how the different accounts were linked together based on replies to tweets. We chose to base our networks graphs on replies instead of retweets, quotes or mentions, because replies imply a conversation between groups of individuals, while retweets, quotes or mentions do not necessarily suggest an actual conversational dynamic between accounts. Retweets, quotes or mentions simply indicate the agreement or disagreement of one tweet by a different account than the one which posted the initial tweet. We created general network graphs for our entire corpora of tweets (mentions and hashtags) and subgroups network graphs based on specific clusters of relations that were calculated by the *rtweet* packages. This allowed us to better see the different specific conversations within the general corpora of tweets.

The network analysis led to the content analysis of the tweets extracted. We used the *quanteda*<sup>5</sup> package and the *topicmodels*<sup>6</sup> package and analyzed the content of the tweets' texts using two specific techniques: wordnet and topic clusters. The first technique shows how words are linked to one another. In turn, from these links, we can infer specific topics that were salient in conversations. The second technique is based on a cluster analysis, which entails the grouping of words in a certain number of clusters based on their Euclidian distance. This technique reveals specific themes or topics that emerge out of different discussions. We used both techniques to confirm the observations of one with the observations of the other. We applied our content analysis to both general corpora (mentions and hashtags) and to the specific observed subgroups from our network analysis.

Finally, we used the packages *tidytext*<sup>7</sup> and *textdata*<sup>8</sup> to perform a polarity sentiment analysis (positive/negative) based on the BING dictionary of sentiments. We first analyzed the conversations of both entire corpora (mentions and hashtags), and then conducted a sentiment analysis on each subgroup's conversations of both corpora to discover whether specific conversations were more negative or positive than others, thus explaining the overall result.

## Participants and connections

Although tens of thousands of tweets were published during the time period studied, the discussion on continental defence on Twitter consisted more of a series of isolated monologues or dialogues than a sustained conversation. For example, only 5 clusters had 3 or more participants exchanging among the tweets using the #norad. As can be seen on figure 1, the discussion coalesced around specific sub-groups and a handful of accounts around which exchanges were more numerous.

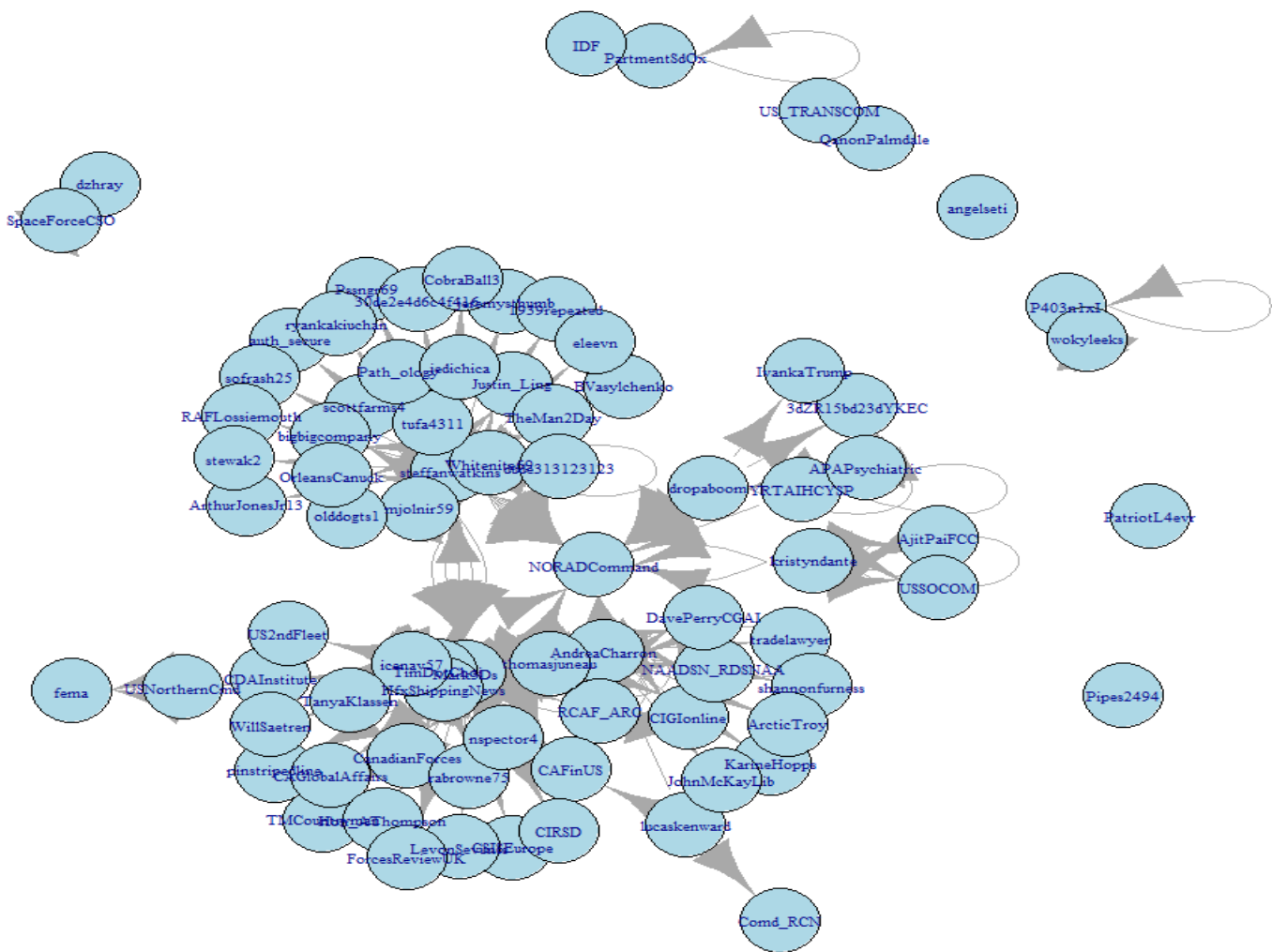


Figure 1: different Twitter accounts mentioning @NORADCommand and the interconnections between these handles.

Four accounts dominated the discussion in our sample: @Mark3Ds, @steffanwatkins, @AndreaCharron and @TimDotChoi. These four Twitter handles occupied a central place in the discussion as they were connected to other accounts. Hence, they engaged with the highest number of other users mentioning NORAD. While the last two are owned by scholars, the first is owned by a retired public servant and the second is owned by a research

consultant. The relatively low number of accounts occupying a central place in the discussion highlights the fact that the continental defence community is of modest size. However, this reality facilitates exchanges and interactions between participants. Exchanges are especially intense and numerous between these accounts, of a back and forth nature rather than unidirectional (see the bi-directional arrows on figure 2 between Andrea Charron and Mark3Ds, and Mark3Ds and TimDotChoi).

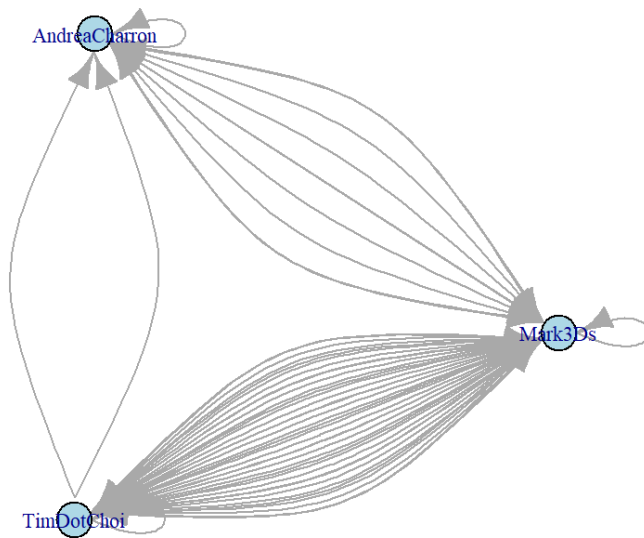


Figure 2: exchange of tweets between 3 accounts.

Accounts that revealed to be central in the discussion tended to reply to other users when not necessarily receiving a reply by these accounts. Twitter handles of organisations or governmental departments (including the Canadian Forces) were also less likely to reply and engage with other users (see figure 3). This latter observation is consistent with observations of social media usage by governmental departments when studying other topics<sup>9</sup>. There seems to exist a reluctance by public officials to exchange with social media users, possibly so as to avoid making mistakes or public controversies (following “untrustworthy” or controversial users, retweeting extreme views, etc.).

## Subgraph based on Mark3Ds

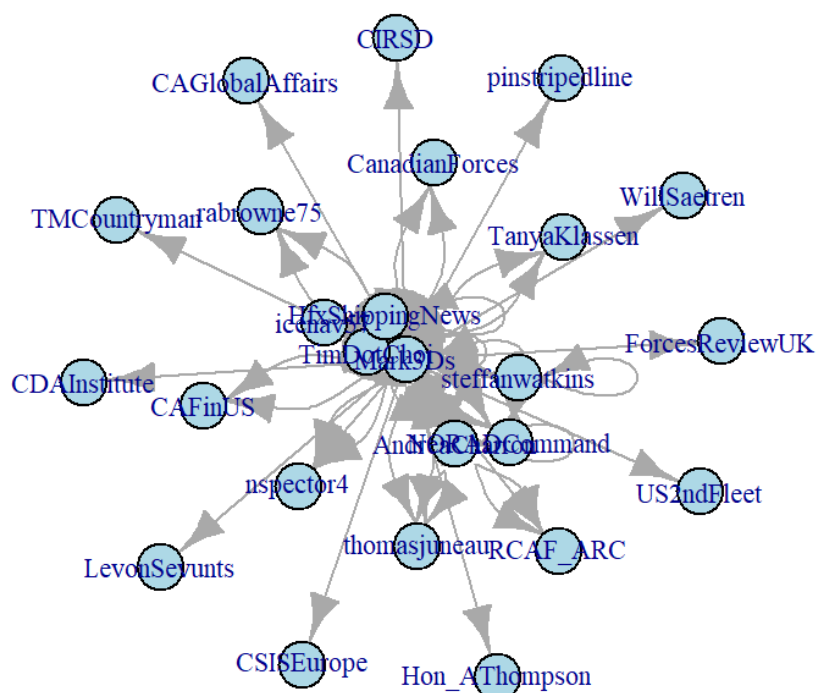


Figure 3: replies by and to Mark3Ds mentioning @NORADCommand.

As we will see in the next section, the nature of the continental defence discussion differed considerably from the public discussion in traditional media and parliamentary committees.

## Nature of the discussion: the analytical, the mundane, the extreme

We analyzed how words were connected in this voluminous number of tweets so as to extract topics and subjects of interest. Overall, much of the attention focused on the Russian threat, with a special emphasis on the danger it poses for the Canadian North. Messages also addressed current affairs and operations, such as the Maritime Forces Atlantic (Marlant) conducting operations (see second column of table 1 below).

Topic 1	Topic 2	Topic 3
North	Fighter	US
Air	Defence	Air
Russian	Intel	Canadian
Defense	Canada	Airspace
Military	marlant	North
American	mission	Military
Aircraft		NORAD
Bombers		defence
Jets		Russian
U.S.		Russians

Table 1: wordnet association found in tweets mentioning @NORADCommand and using the #norad.

It is also worth highlighting what was omitted in these messages: it would appear that dominant topics in the tweets analyzed did not address the Canadian participation to the U.S. anti-ballistic missile system, China’s rise or cybersecurity, as well as all themes that occupied a central place in the continental defence conversation in traditional media and on parliamentary committees.

Focusing on specific exchanges allowed us to extract other topics of interest. Hence, we decided to look at key terms used in conversations between the four most central accounts described earlier (@Mark3Ds, @steffanwatkins, @AndreaCharron and @TimDotChoi).

Topic 1	Topic 2	Topic 3	Topic 4
News	Icebreakers	Fighter	Aircraft
Fighter	Gov	Competition	US
Competition	Cdn	Need	Hypersonic
Force	First	Earlier	First
Public	Icebreaker	Fighters	Program
Decision	Security	Attack	Future
Intel	Replacement		
	Polar		

Table 2: wordnet association found in tweets of four accounts mentioning @NORADCommand.

Attention was found to be mostly devoted to assessing capabilities. More specifically, the Canadian military procurement process (and its shortcomings) monopolized the discussion on Twitter, with the fighter jet and icebreaker procurements being the most salient of these topics. Topic 4 drew attention to new capabilities, namely hypersonic missiles, that again, indirectly referred to great powers competition and the Russian threat. Social media is more inclusive and allows for more voices to be heard. However, this does not mean that all messages will be equally significant or even backed by evidence. Hence, we noticed considerable attention devoted to NORAD’s Santa Tracker, with numerous accounts relaying these messages. This “community

outreach function”, in NORAD’s terms, received great resonance on social media and presented a more joyous and light-hearted face of the organisation.

On another note, we found strong evidence that conspiracy theories were well structured and organized around a few highly active accounts. Numerous messages were posted accusing NORAD of taking part in climate geoengineering poisoning North American residents.

All in all, the 24203 tweets mentioning @NoradCommand displayed more positive than negative language (see table 3).

	<b>Positive</b>	<b>Negative</b>
<b>All tweets</b>	58%	42%
<b>Mark3Ds-AndreaCharron-NoradCommand exchange</b>	53%	47%
<b>Mark3Ds-Steffanwatkins-NoradCommand exchange</b>	54%	46%
<b>Mark3Ds-TimDotChoi-HfxShippingNews exchange</b>	53%	47%
<b>Mark3Ds-AndreaCharron-TimDotChoi exchange</b>	54%	46%

Table 3: rates of positive and negative language used about NORAD by different accounts mentioning @NoradCommand.

The four central accounts in our dataset were reflective of general sentiments about NORAD, with messages that conveyed more positive than negative sentiments about the organisation. The overall positivity rate reached 58% with friendly accounts (such as @USNorthernCmd) displaying highly positive messages when mentioning NORAD.

On the other hand, the situation is reversed for tweets that used the #norad, with negative language accounting for 55% against 45% of positive passages. Here, the tone of language was split almost evenly (50% positive/50% negative) in most discussions. However, two discussions stood out and tipped the balance on the negative side. While messages about the Santa Tracking program were overwhelmingly positive (88% positive/12% negative), they were less numerous than posts accusing NORAD of partaking in climate geoengineering (93% negative). This points out that conspiracy theories are quite active and well connected online, influencing the overall nature of the discussion prevailing on social media. It must be noted however that these accounts tended to be connected to one another and did not project significantly to broader circles of influence in our sample.

## Conclusion

This analysis constituted an exploratory attempt at mapping social media interactions. Social media is a more multi-form and fluid communication tool than traditional media. Users are the audience, but are also active participants creating and relaying content. More work needs to be done to better analyze how policy ideas are

diffused online, to identify the nature of conveyed messages, and to outline how policy networks are formed and evolve through time, based on this dialogic dynamic.

Although beyond the scope of this policy primer, investigating misinformation and disinformation campaigns on social media will prove crucial to better understand past occurrences and anticipate future ones. Military issues and actions undertaken by military organisations are particularly exposed to this phenomenon as there exists elements of secrecy inherently involved with the conduct of some of their operations. Understanding and anticipating social media dynamics might very well prove pivotal to control messaging and limit ambiguity that could ultimately lead to misinformation and disinformation.

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<sup>2</sup> See for example Nancy Teeple (2020). Canada and Missile Defence: A New Strategic Context Requires Revisiting Participation. NAADSN, August 7 2020, retrieved from: [https://www.naadsn.ca/wp-content/uploads/2020/08/20-August\\_Teeple\\_Policy-Brief-Canada-Missile-Defence.pdf](https://www.naadsn.ca/wp-content/uploads/2020/08/20-August_Teeple_Policy-Brief-Canada-Missile-Defence.pdf) ; Andrea Charron and James Fergusson (2019). NORAD: Beyond Modernization. Centre for Defence and Security Studies; University of Manitoba, January 31 2019, retrieved from : [https://umanitoba.ca/centres/cdss/media/NORAD\\_beyond\\_modernization\\_2019.pdf](https://umanitoba.ca/centres/cdss/media/NORAD_beyond_modernization_2019.pdf)

<sup>3</sup> Statistics Canada. The use of media to follow news and current affairs. February 15 2016, retrieved from : <https://www150.statcan.gc.ca/n1/pub/89-652-x/89-652-x2016001-eng.htm>

<sup>4</sup> Kearney, M. W. (2019). "rtweet: Collecting and analyzing Twitter data", *Journal of Open Source Software*, 4 (42). [package update: 2020-01-07]

<sup>5</sup> Benoit K, Watanabe K, Wang H, Nulty P, Obeng A, Müller S, Matsuo A (2018). "quanteda: An R package for the quantitative analysis of textual data", *Journal of Open Source Software*, 3 (30). [package update: 2020-03-13].

<sup>6</sup> Grün B, Hornik K (2011). "topicmodels: An R Package for Fitting Topic Models", *Journal of Statistical Software*, 40 (13). [package update: 2020-04-19]

<sup>7</sup> Silge J, Robinson D (2016). "tidytext: Text Mining and Analysis Using Tidy data Principles in R.", *JOSS*, 1(3). [package update: 2020-04-17].

<sup>8</sup> Emil Hvitfeldt (2020). *textdata: Download and Load Various Text Datasets.*, R package version 0.4.1. [package update: 2020-08-24].

<sup>9</sup> Mathieu Landriault and Jean-François Savard (2020). Engagement with Inuit People by the Canadian Military via social media. NAADSN, Trent University, March 6 2020. Retrieved from: [https://www.naadsn.ca/wp-content/uploads/2020/04/Policy-Brief-Landriault-and-Savard\\_March-9.pdf](https://www.naadsn.ca/wp-content/uploads/2020/04/Policy-Brief-Landriault-and-Savard_March-9.pdf)