Polarised communication patterns - structure and content

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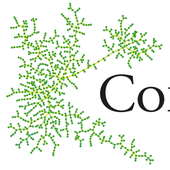

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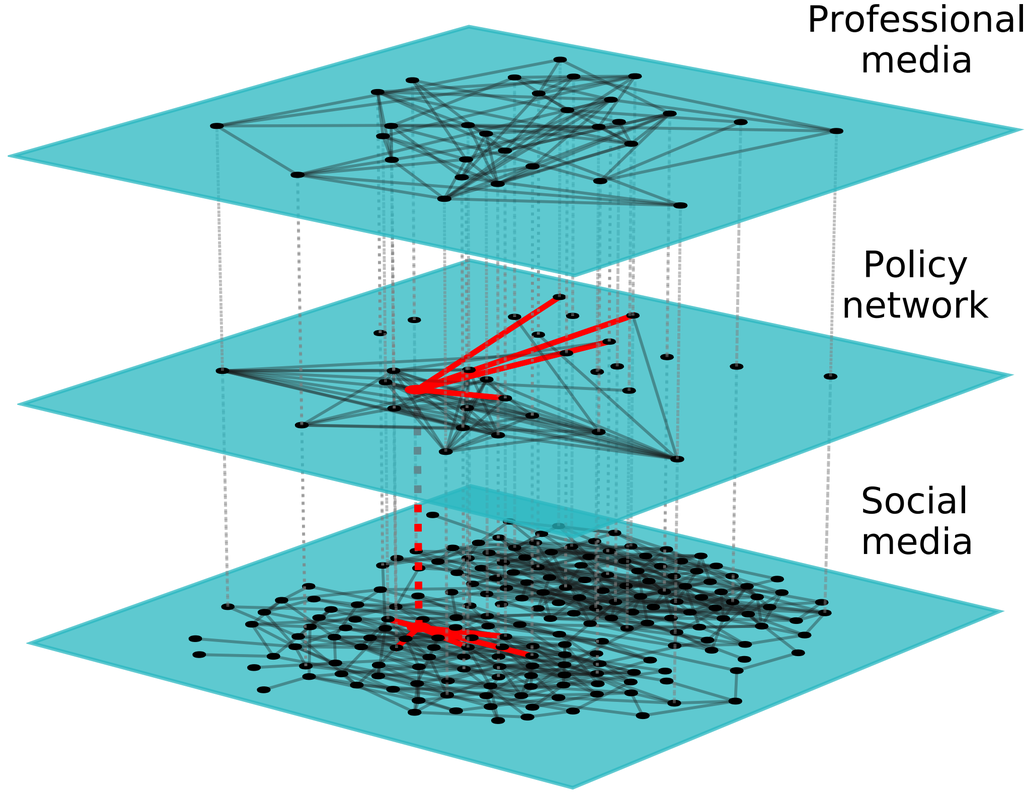
Multilayer networks of political communication

- Individual (communication) networks have been studied intensively in the past
  - Findings: Polarisation, core-periphery structures, hub nodes …
- Multilayer approach:
  1. Networks are part of a larger system (figure)
  2. Networks are reflections of multiple (latent) networks



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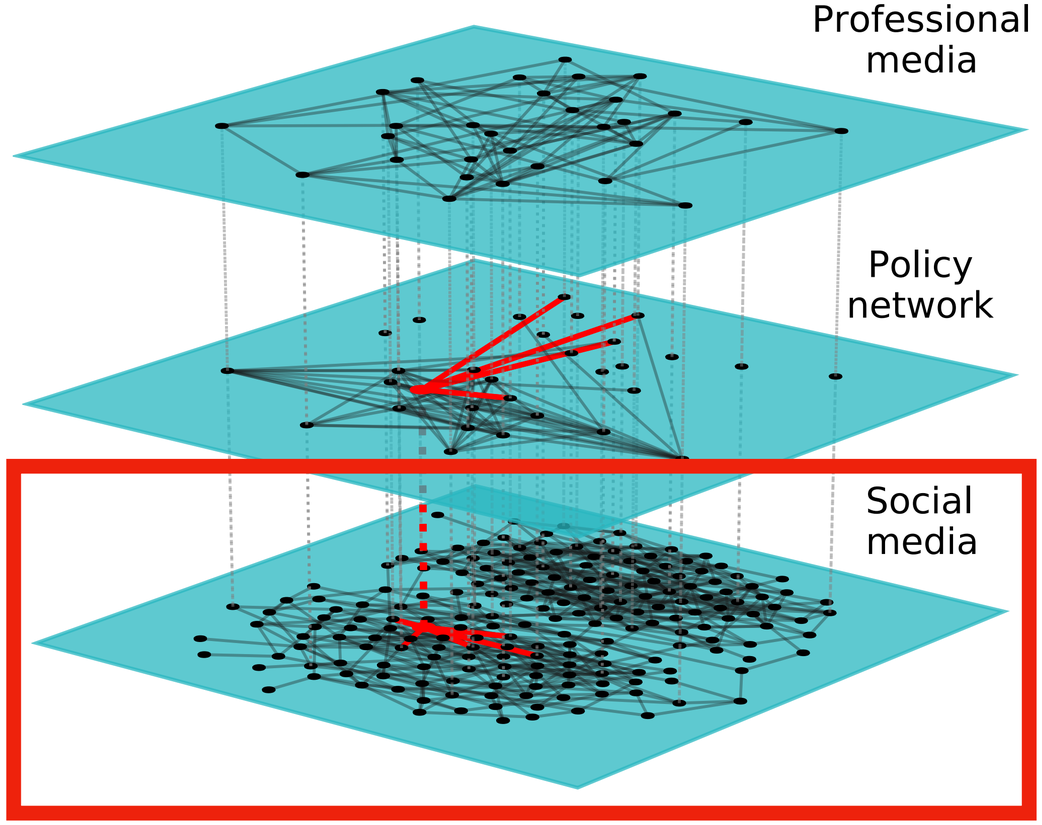
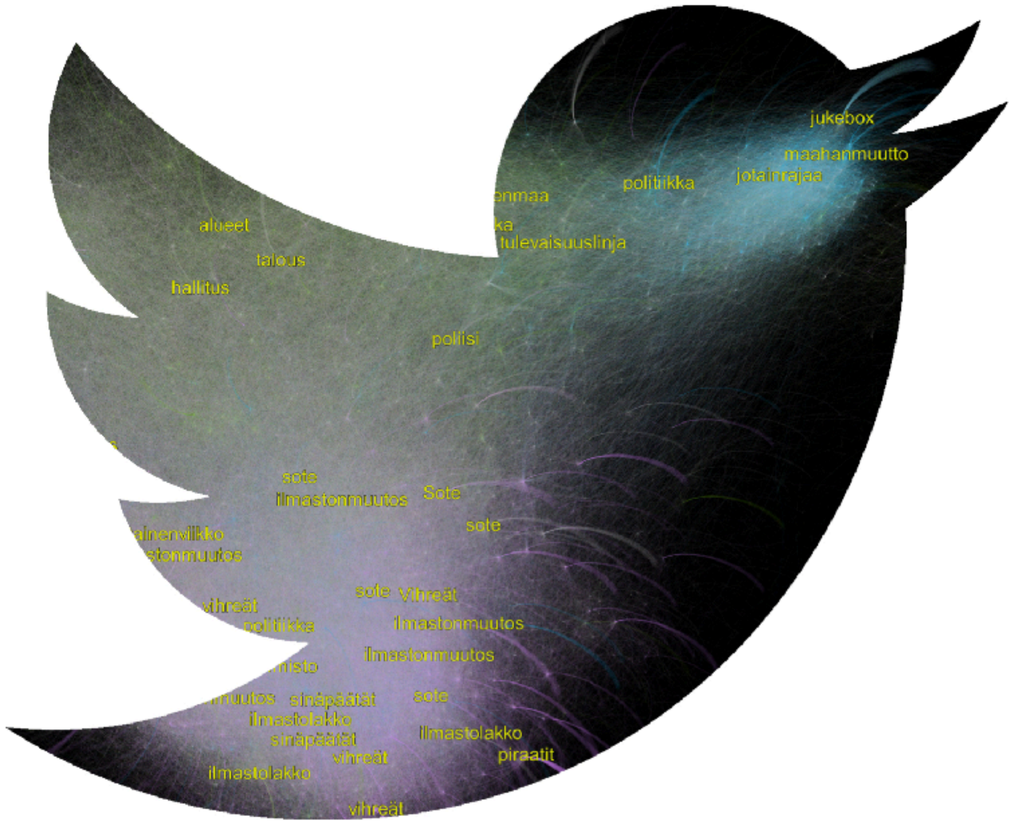
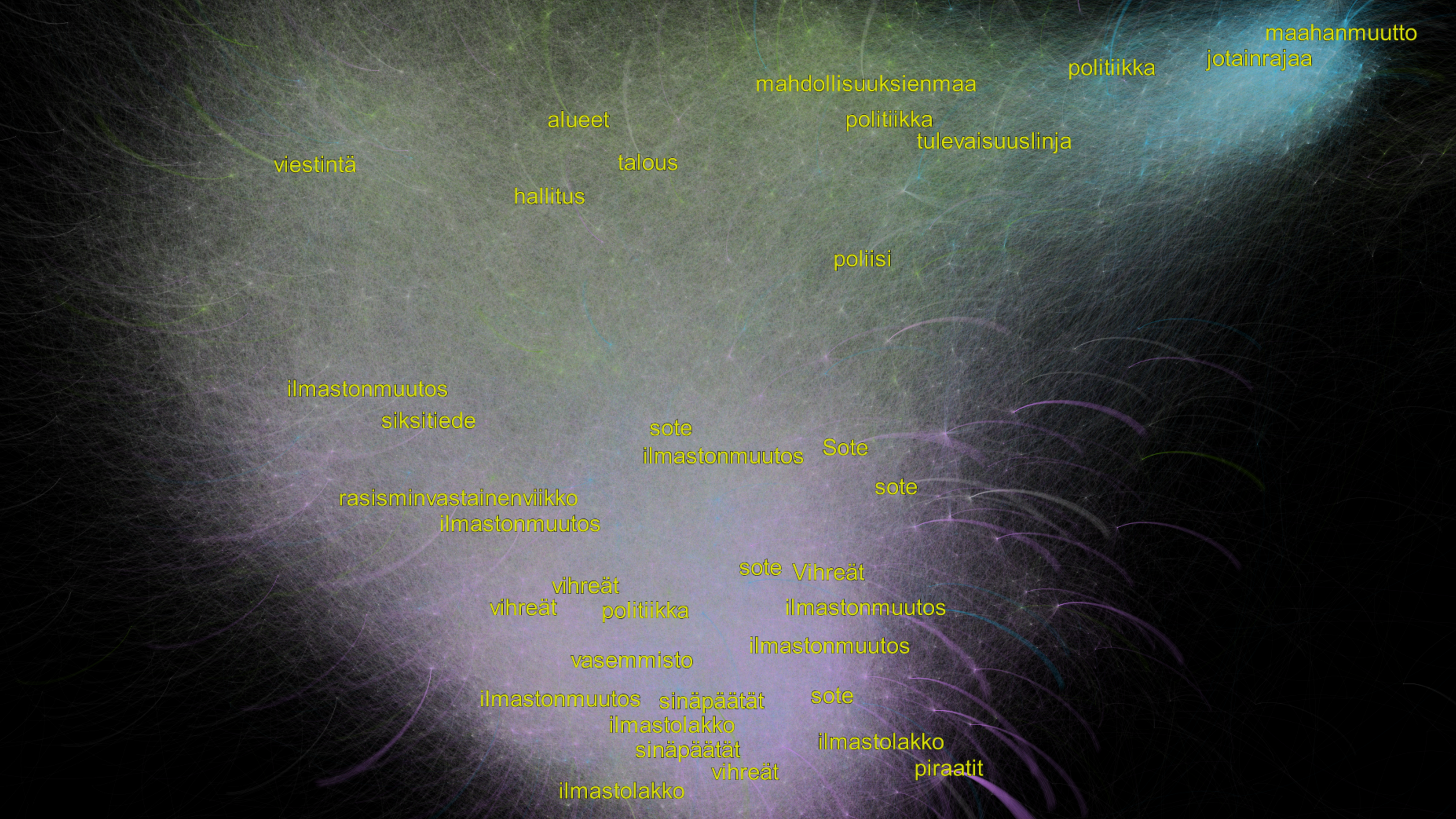


ELEBOT: bot interference in 2019 elections?

- Analysis based on millions of tweets on political topics around the elections
- Project for Ministry of Education, The Security Committee, Prime Minister's Office
- Problems: bot detection in Finnish language
- Conclusion: some bot activity, but its impact was much smaller than in similar studies in other countries



A. Salloum, T. Takko, M. Peuhkuri, R. Kantola, MK, "Botit ja informaatiovaikuttaminen Twitterissä Suomen eduskunta- ja EU- vaaleissa 2019"
http://urn.fi/URN:ISBN:978-952-60-8649-1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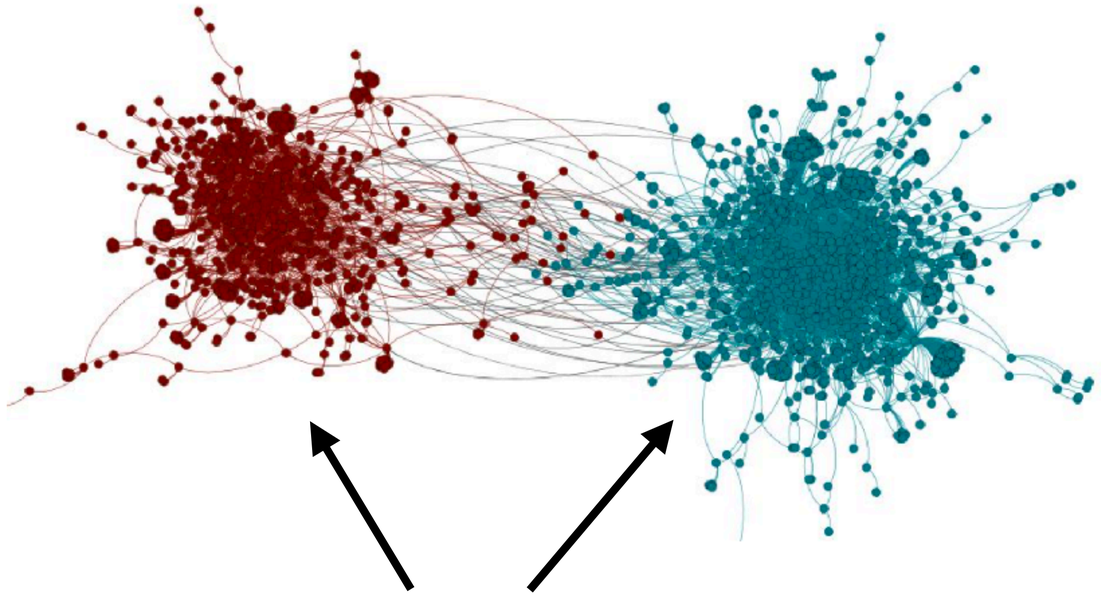
(Political) communication in Twitter

- Interactions are mix of arguments & agreements: networks don’t have much structure
- Retweets are endorsements: more structure, political spectrums visible
- Networks aggregate all kinds of discussions

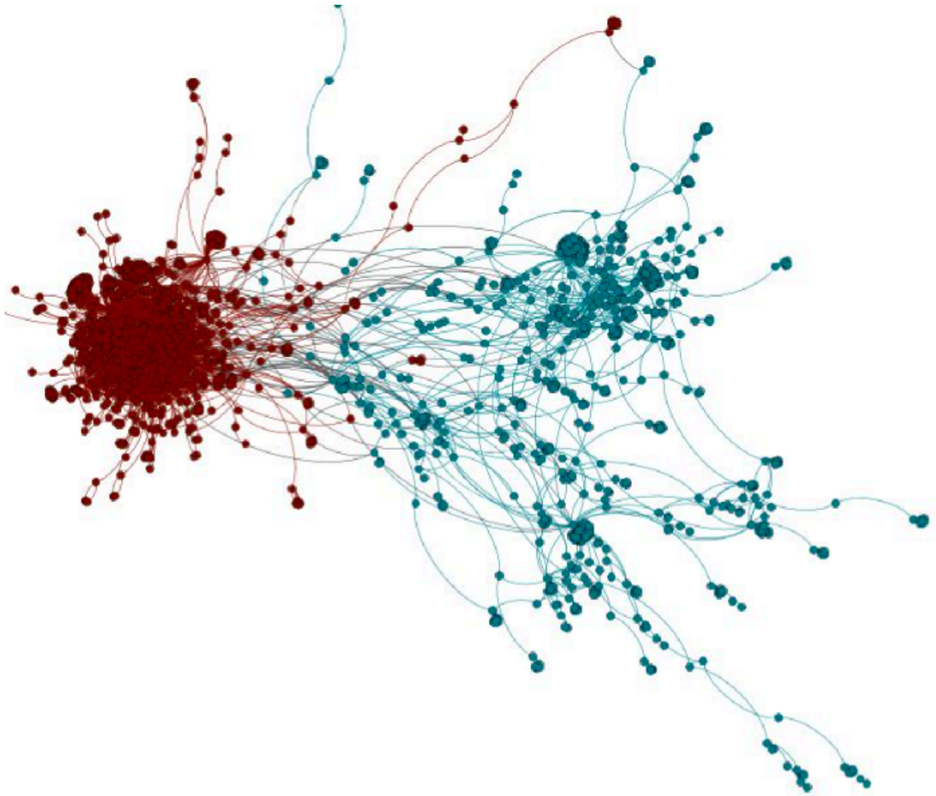
Many topic-based networks are clearly polarised

Green Party



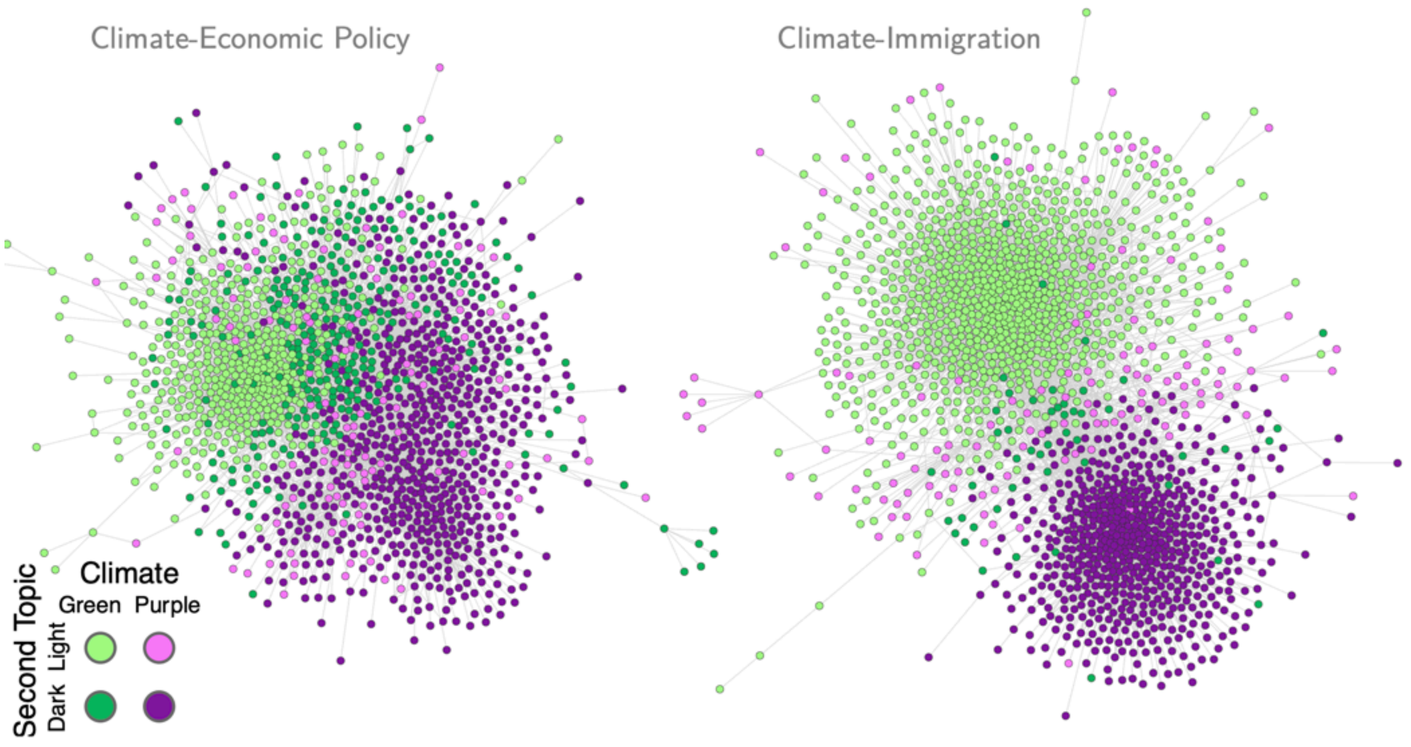
Colors: groups found with a graph clustering method

Immigration



Alignment of topics

- Endorsement networks are naturally polarised on debated topics
- Polarisation problematic if topics are **aligned**: same people consistently on opposing sides
- Alignment has previously been observed in questionnaire studies



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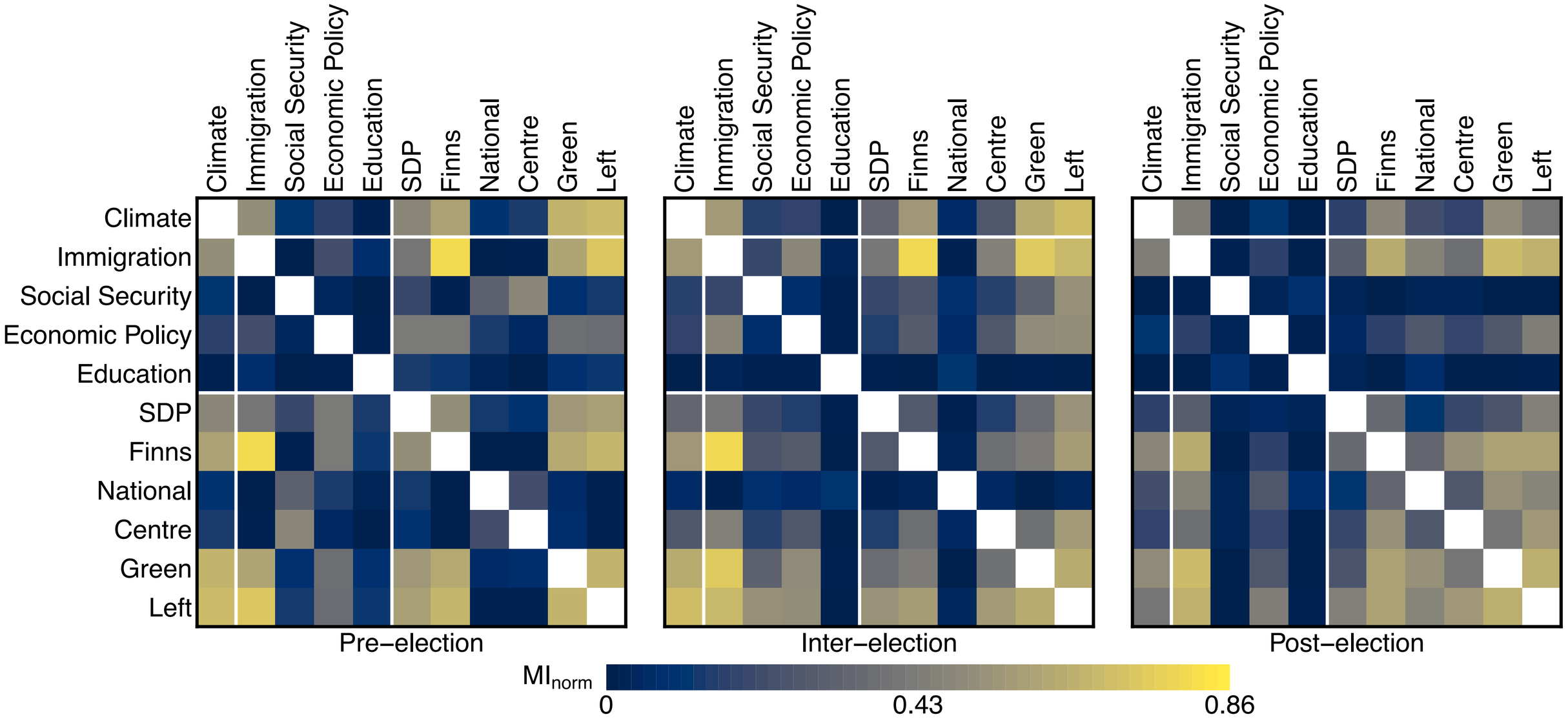

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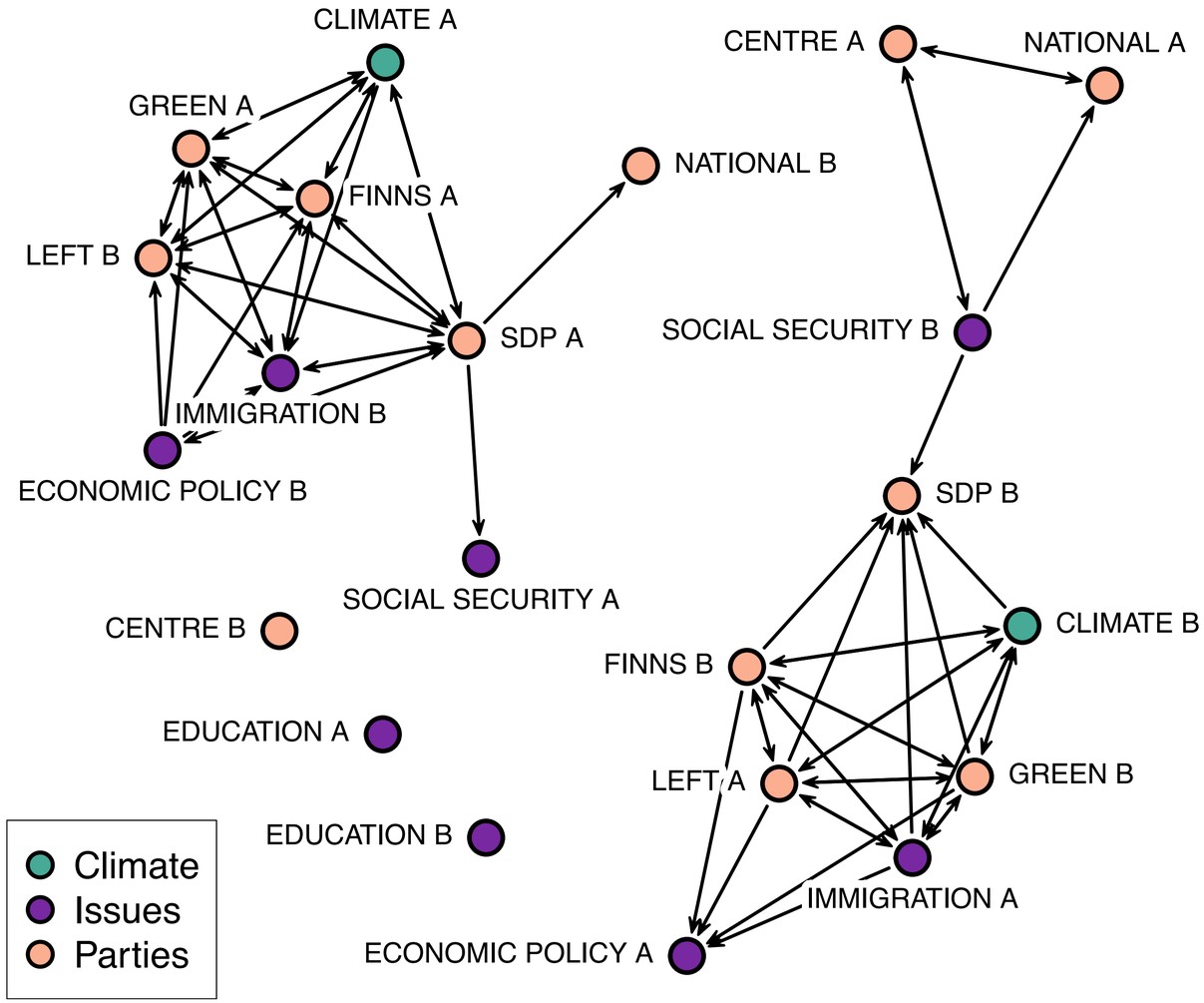

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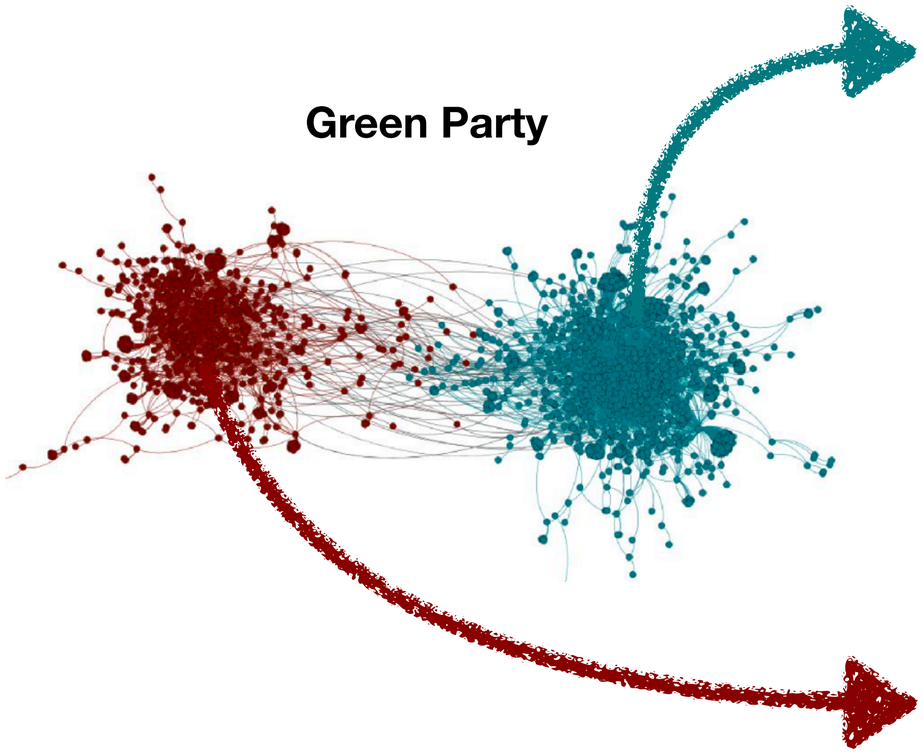
What about the content?



1. Me and many others will remember Sipilä's government from how they were silent in front of the far right, and how they agreed to inhumane refugee politics. That is why I'm #green, we do not remain silent and don't accept inhumane politics. #antiracism #greens
2. Our generation can still control the climate change. Our children will not have that possibility. Voting is now more important than ever. In my video I will tell what kind of Finland I want to leave for the next generations. What about you? #elections2019 #greens [url]
3. Greens are becoming the largest party in the capital, think about that! Amazing! #greens #elections2019

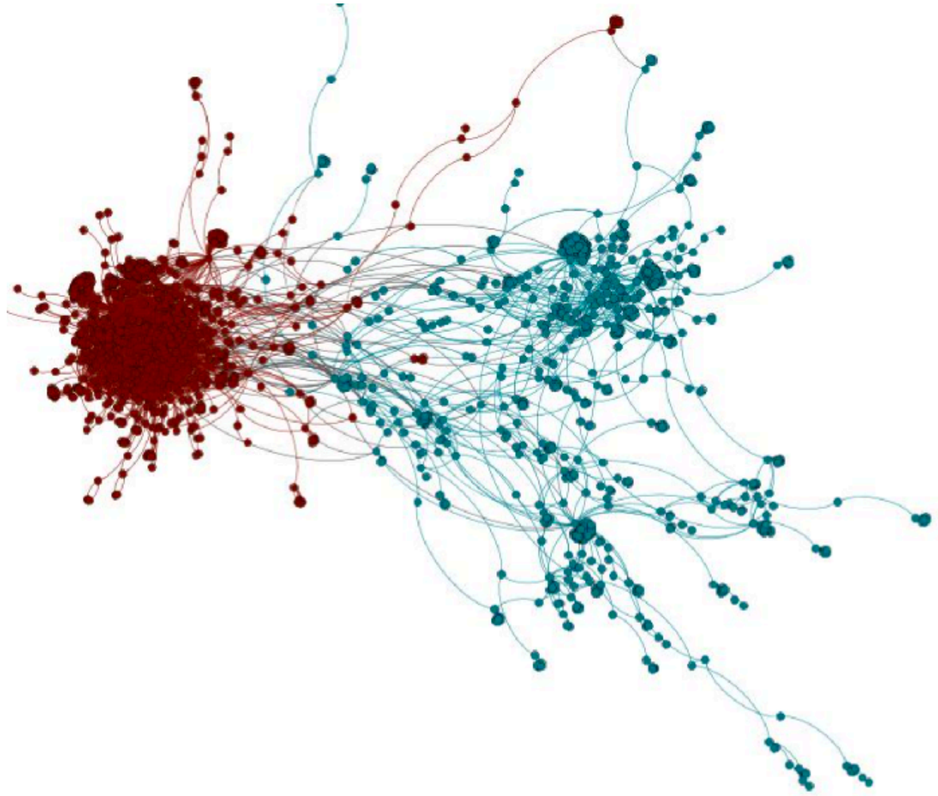
1. Parliament members drove around with taxis during the last term with 1.8 million EUR. The Green Party is leading the statistics. Ville Niinistö doesn't feel like walking even 700 meter distances! #politics #greens [url]

2. Children are forced vegan, cars are taken away from people, and energy bills keep rising. #greens Jobs for foreigners and everything is privatised. #nationalcoalitionparty Finland should think of Finns. #truefinns Which one do you choose?

3. Hypocritical #greens don't care about electrical cars or biodiesel as fuel, but instead they just drive around with the same petrol and diesel cars as normal people. Don't do as we do, but do as we preach. #elections2019 #climate [url]

What about the content?

Immigration

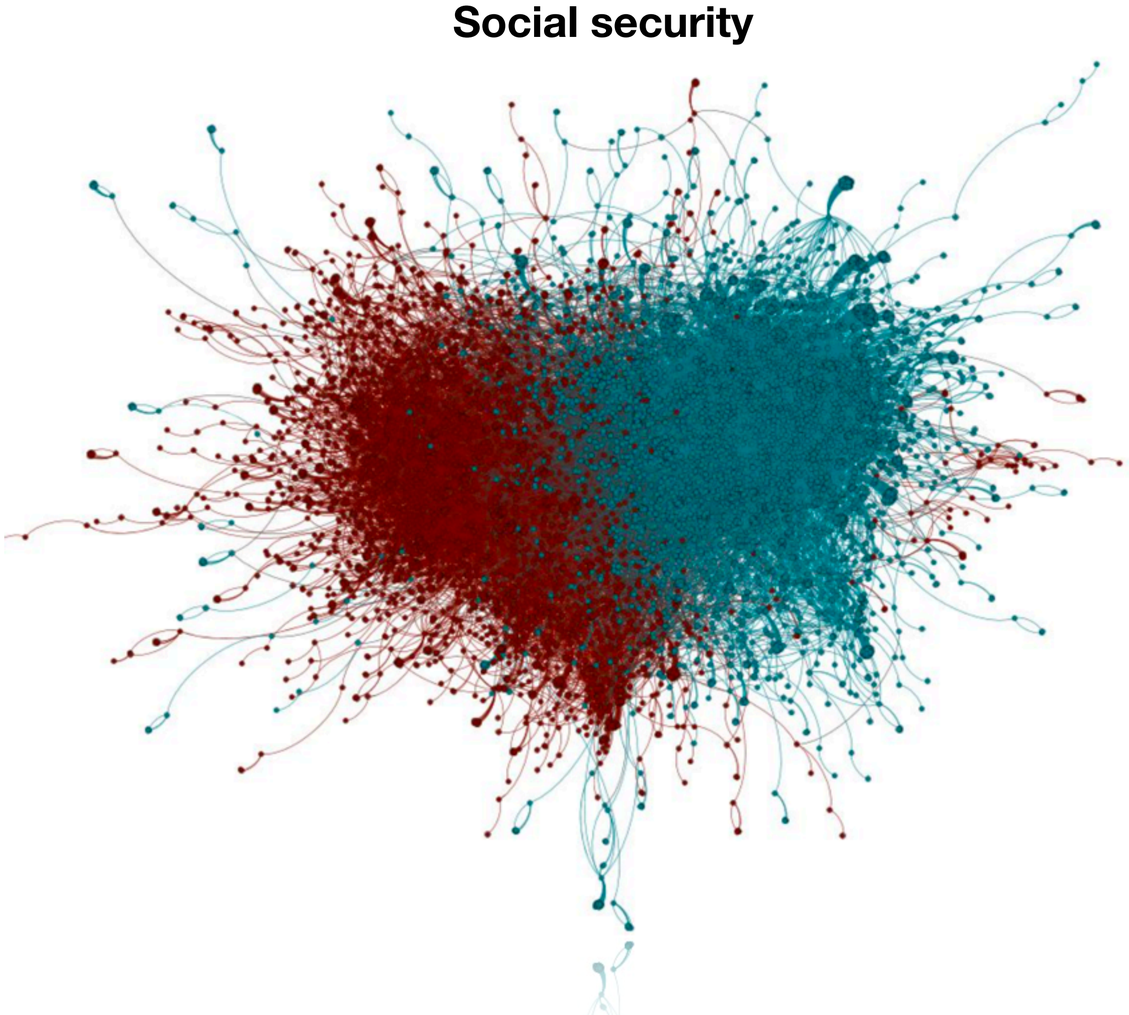


1. Our country's population grew by 370 people in January. The growth was maintained by immigration, because there were 1,331 more immigrants than emigrants. There were 961 less births than deaths. [url] #population #immigration #emigration [url]
2. We are losing our school's cleaner! He is going to work elsewhere: as an assistant professor of peace and conflict research in the University of California. He has lived in Finland 9 years with his family and didn't want to leave. Why is it like this? Read. #immigration [ulr]
3. The mistakes guided by the 2015 asylum policy program must be corrected in the government platform. Joining families must be made possible, asylum procedure and legal council system must be fixed. [url] #immigration #childrensrights

1. #closetheborders is the only valid #immigration policy. Everything else is insanity and betrayal. #elections2019 #parliamentelections
2. New report: The percentage of sex offences that are made by immigrants is even larger than presented before. 100% in the rapes in public places. "Mismatch is enormous. It cannot be explained by random fluctuations." #sexoffences #immigration [url]
3. Paul Usvalampi (True Finns) urges that #finns could foster their on #identity, hold on to their territories and live there with their own people. Without being force fed multiculturalism. Great article! #immigration [url]

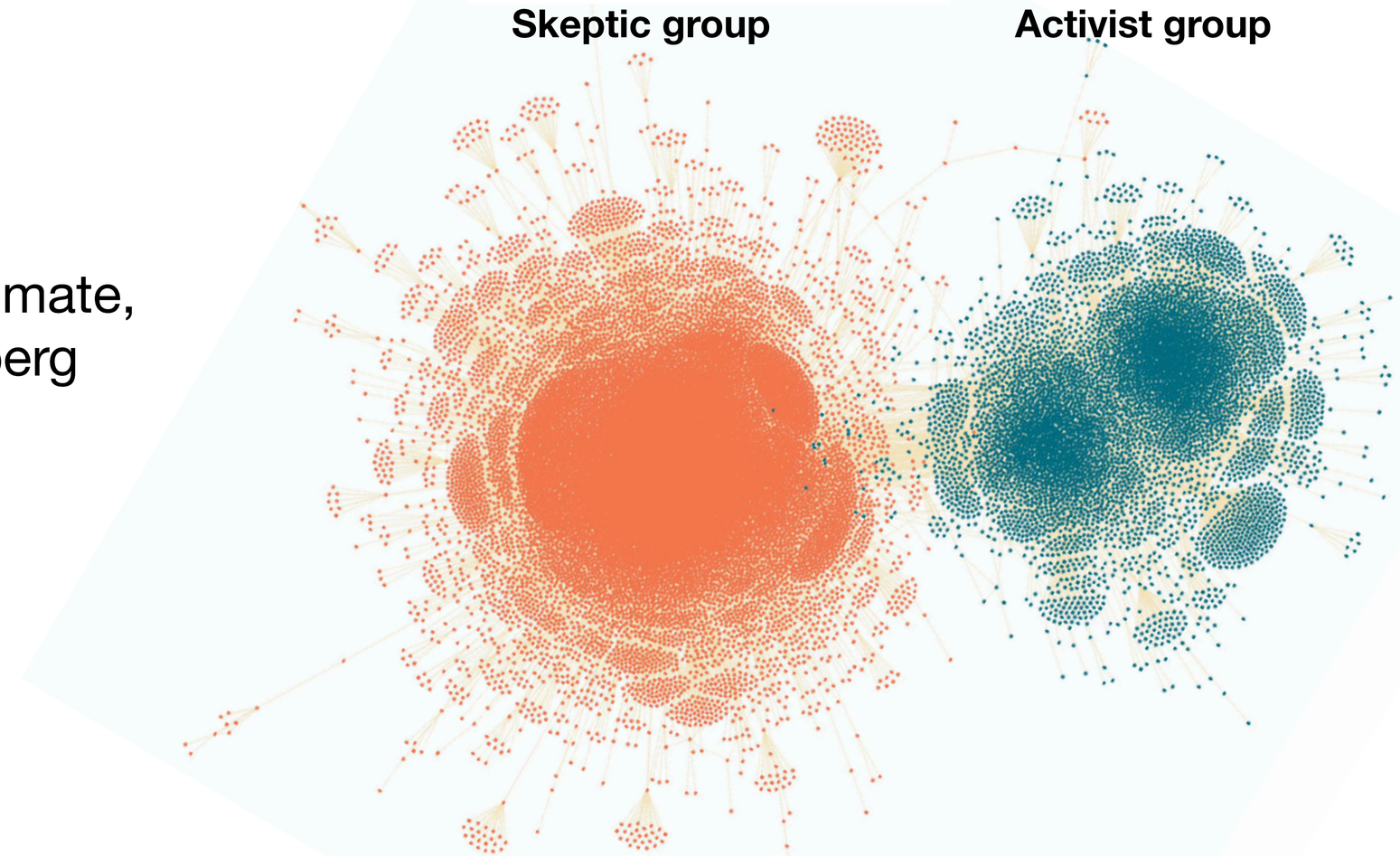
Some topic-based networks are less polarised

- The structural polarisation is not clear, the network could be cut in many ways
- However, the topics can still be highly political and controversial
- Is the content polarised?



What kind of content spreads in the bubbles?

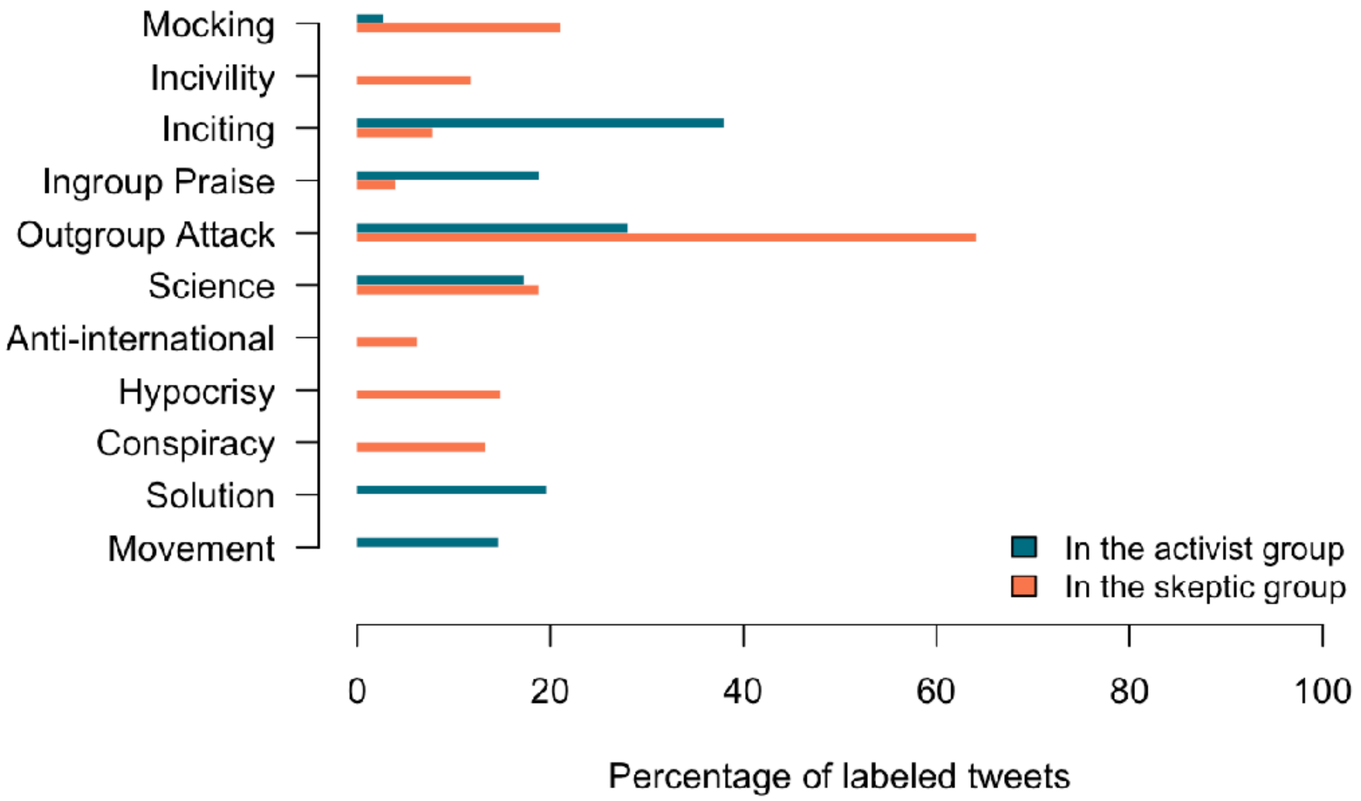
- Case: retweet networks of climate, Nobel price and Greta Thunberg around the 2019 Nobel price announcement



Y Xia, THY Chen, MK. "Spread of Tweets in Climate Discussions." arXiv:2010.09801 (2020)

Content analysis

- Manual labelling of tweets based on reading



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Content analysis

- Virality score: probability that user retweets after seeing the tweet, given the overall activity of the user
- Statistical inference problem

Activist Group (n=261)		Skeptic Group (n=128)	
Explanatory Variable	Predicted Change in Virality (%)	Explanatory Variable	Predicted Change in Virality (%)
Mocking	0.0	Mocking	0.0
/	/	**Incivility**	16.2
Call to Action	0.0	**Call to Action**	14.5
Ingroup Praise	0.9	Ingroup Praise	0.0
Outgroup Attack	1.5	**Outgroup Attack**	-7.9
Science	-2.7	Science	0.0
Movement	12.3	/	/
Solution	0.0	/	/
/	/	Anti-international	0.0
/	/	**Hypocrisy**	10.1
/	/	Conspiracy	0.0
Hashtags	0.5	**Hashtags**	1.6
Mentions	1.7	**Mentions**	1.1
Authors	-32.3∼46.4	**Authors**	-27.3∼26.5

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Content analysis

- Virality score: probability that user retweets after seeing the tweet, given the overall activity of the user
- Statistical inference problem

User	Most viral tweet	Least viral tweet
A1	**Virality score: 0.155** **[Movement]** LOOK AT ALL THOSE PEOPLE marching in Alberta to demand #climateaction! Even here people want action on the #ClimateEmergency. Denying our situation doesn't help. #ActOnClimate #ClimateStrike #FridaysforFutures #cdnpoli #climate #energy #elxn43 @GretaThunberg. Via @vineshpratap [video]	**Virality score: 0.035** **[Science, Call to Action]** Air pollution is now more deadly than war, smoking and TB. It kills 7 million people every year. We have solutions to keep our communities safe and deal with the #climate crisis. Let's implement them. #GreenNewDeal #AirPollution #ClimateChange #energy #tech #PanelsNotPipelines [video]

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Conclusion and summary

- The structure and content of communication are intertwined
  - Analysing the communication networks is not enough; combination with content analysis is very powerful
  - Can we combine structural and content-based polarisation detection?
- Some analysis in Finnish is limited: not as good publicly available tools e.g. for sentiment analysis as in English