Hierarchies in Inter-personal and Intergroup Communication in Social Media: Case 'Smart Voting'

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Abstract. The research is devoted to the analysis of hierarchies in inter-personal and intergroup network communication an example of a strategy of the election campaign in the Moscow City Duma in 2019. The study involved a cross-disciplinary approach using neural network technologies, complex networks analysis. For the correct interpretation of the content, content analysis, semantic analysis and analysis of word association were performed. The dataset included social networks, microblogs, forums, blogs, videos, reviews. The expansion and enrichment of the users' world view in the network environment in the analyzed communicative situation occurs through spreading of a more developed and well-founded model of the world, the carrier of which is a social media influencer with the necessary set of knowledge, techniques, a high level of some assets, who is able to communicate current requirements. Also the study made it possible to identify a level of social stress.

Keywords: Social networks · Neural network technologies · Word associations · Political communication

1 Introduction

Network communications are an important component of modern media space. The specific features of inter-personal and intergroup communication are shown in numerous scientific studies. In particular, researchers note that social networks can filter actors, close groups, reduce the chance of unintentional communication, isolate themselves from other groups, which causes some dosage and reduction of intergroup interaction of communities with different goals, political goals, interests, etc. (Hayes et al. 2015; Carr et al. 2016; Yang et al. 2017). User clustering in political discussions has been investigated in (Bond et al., 2012; Mikolov 2013; Kramer 2014; Weaver 2018).

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On the other hand, the creation of filter bubbles, echo chambers in groups with specific interests leads to the isolation of intragroup communication, the strengthening of group relationships and norms, while at the same time it hinders communication between members of different virtual communities (Conover 2012; Colleoni 2014; Williams 2015).

Numerous and diverse studies are devoted to the analysis of social and political polarization that occurs in various communicative processes in the digital environment (McCright and Dunlap, 2011; Colleoni et al. 2014; Barberá et al. 2015; Rivero 2017; Evolvi, 2017; Duca and Saving 2017). On the other hand, the creation of filter bubbles, echo chambers in groups with specific interests leads to the isolation of intragroup communication, the strengthening of group relationships and norms, while at the same time it hinders communication between members of different virtual communities (Colleoni et al. 2014).

Meanwhile, some social and systemic features of social networks contribute to intergroup communication even more than offline or traditional communication channels. Scott A. Golder and Sarita Yardi show that two structural characteristics, transitivity and mutuality, are significant predictors of the desire to form new ties (Golder and Yardi 2010).

Thus, on the one hand, social media can unite communities and significantly facilitate intergroup contacts; on the other hand, network communications make it possible for different communities of actors to be isolated and limited only by intragroup communication, increasing intergroup distance. That is, the question remains, which methods and techniques are most effective for purposeful management of the virtual group behavior, both within the digital space and in real life.

It is worth recalling that Yu. M. Lotman introduced the concept of "semiotic universe", according to which the semiotic space was considered as a single mechanism, within which the "large system" called "semiosphere" turned out to be primary (Lotman 1992). It can be assumed that the modern information and communication universe as part of the noosphere is a society with a technological component that is subject to it, which provides for the collection, storage and exchange of information generated by individual members (and their groups) of the society. Since this society consists of separate individuals, the model for presenting information in the society is based on the model for presenting information about the world of an individual, i.e. the information and communication universe means models of the world of individual members (and their groups) within the society supplemented by their (individual members or their groups) intentional mechanisms complemented by natural and/or artificial means of communication.

Models of the world of individual members of the society are grouped and averaged as social groups of actors are formed, up to the formation of a single averaged model of the world of this society. In particular, the averaging process can be traced on the example of the analysis of texts in social groups during the transition from the individuals' texts to the texts of social groups of various sizes.

The objectives of this study are as follows:

1. Analysis of the hierarchy in inter-personal and intergroup communication in social networks.
2. Study of mechanisms of influence (Xu and Wu 2020) in social networks by means of expanding and enriching the users' world view by spreading a more developed and reasonable world model (segment of the world model).

Method: The study involved a cross-disciplinary approach (mixed method). For the correct interpretation of the content, content analysis, semantic analysis and analysis of word association were also used.

The neural network technology TextAnalyst was used as a toolkit to help form a semantic network common for the entire corpus of analyzed texts, from which the topic structure of the analyzed content was extracted; also, an associative search was performed.

Procedures:

1. Content selection and purification (filtering).
   1.1. Isolation and extraction of bots.
   1.2. Selection of posts.
      1.2.1. Selection and analysis of social media influencers' posts.
   1.3. Selection of comments.
2. Identification of the topic structure of the selected network content.
3. Identification of key topics.
4. Content ranking (messages, authors, loyalty, involvement, audience).
5. Extraction of the semantic core, which consists of nominations from the semantic network with a link weight of 98–100.
6. Text analysis of the semantic core.
7. Constructing a semantic network.
8. Performing an associative search, analysis of word association, constructing an associative network.
9. Detection of social stress (for the method of detecting social stress, see Kharlamov, Pilgun, 2020).

Tools: Brand Analytics (br-analytics.ru) social media monitoring and analysis system was used as a tool for data collection; TextAnalyst technology (http://www.analyst.ru), developed by one of the authors of the paper, A. Kharlamov, was used for neural network text analysis.

Data: The dataset included data from social networks, microblogs, forums, blogs, videos, reviews devoted of a strategy put forward by Alexey Navalny's team to deprive the pro-government party 'United Russia' of votes in regional and Federal elections in Russia. The goal of 'Smart voting' is to consolidate the votes of those who oppose 'United Russia'. Date of collection: 14.07.19–08.09.19. It should be noted that this time period was the period of the election campaign in the Moscow City Duma and was followed by active protests of civil society, online

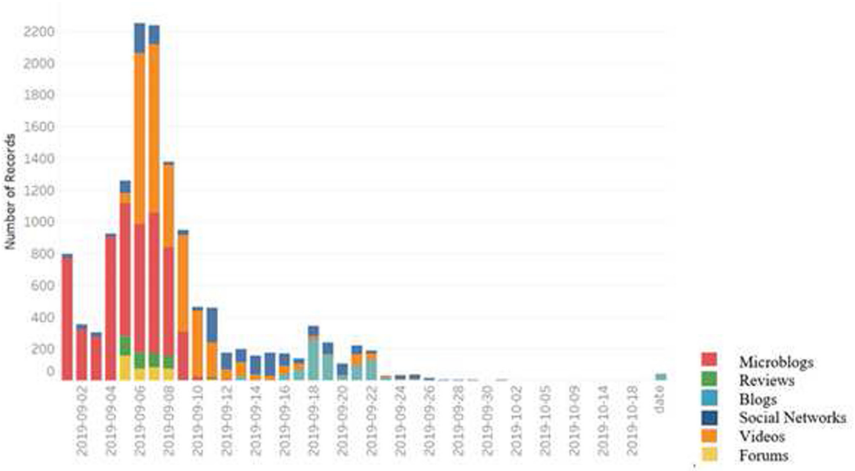

Fig. 1. Dynamics of publications comments.

activism, mass meeting, since, in the opinion of the public, the legitimacy of the procedures was violated (Fig. 1).

To achieve the objectives of the study, three verbal clusters were identified in the consolidated dataset: (1) posts (Fig. 2), (2) comments (Fig. 3), (3) social media influencer's posts (Fig. 4).

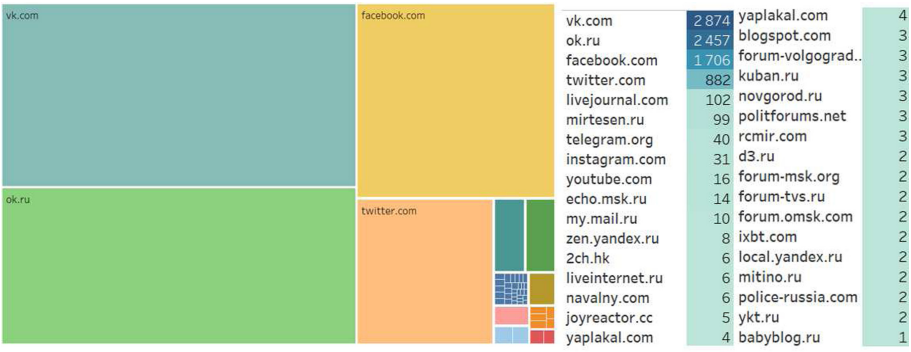

Fig. 2. Posts on different resources.

As a result of the initial analysis of the consolidated database, 73 key topics were identified. Sentiment analysis of the data showed that only 4 of them are neutral, 4 are positive, and 65 are negative.

The analysis of the consolidated dataset for all topic blocks revealed the weights of the markers; the markers associated with "Smart Voting" (99) and "Investigation of the ACF – Vice Mayor" (82) topics received the greatest weights.

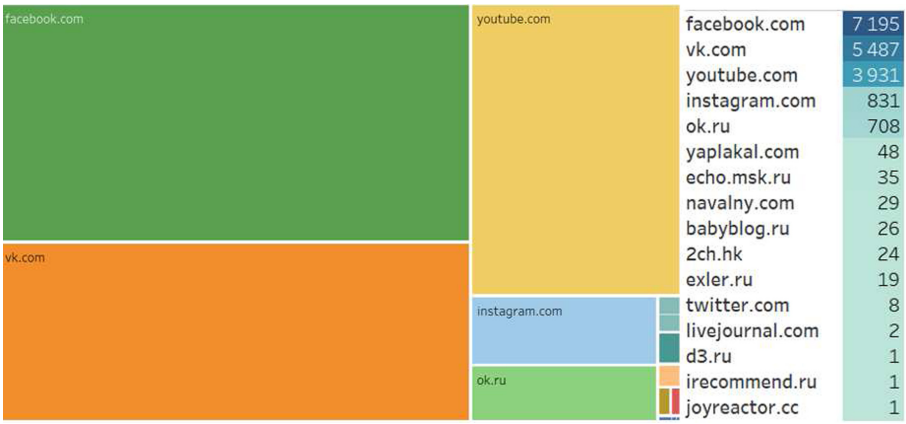

Fig. 3. Comments on various resources.

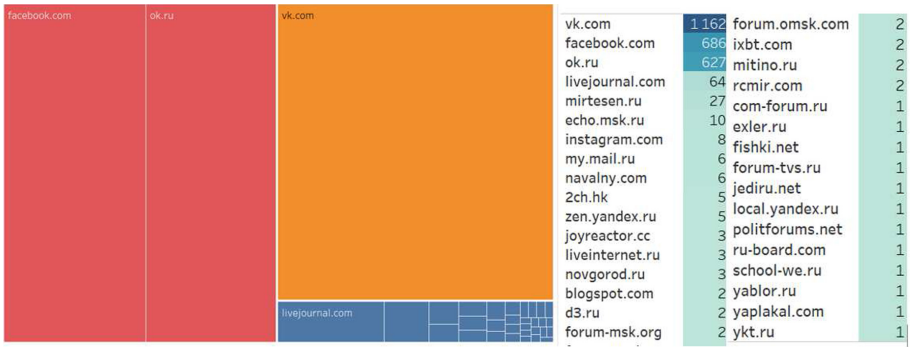

Fig. 4. Social media influencer's posts on various resources.

For the study, the "Smart Voting" topic block was selected as the one that received the greatest weights regarding relations, which reflects the maximum attention of users and the greatest significance in the network space over a given period.

In the course of the study, the verbal modus of the content was analyzed by relevant tags.

To analyze the hierarchy in inter-personal and intergroup political communication, datasets were used that contained users' posts and Alexey Navalny's posts as an social media influencer in this context. The "social media influencer" (Kharlamov and Pilgun 2020) status is confirmed by the analysis of digital footprints and speech behavior of the actor (Figs. 5 and 6).

In the study of the mechanisms of transition from lower permission levels to higher permission levels, a consolidated database was analyzed.

Intergroup communication was analyzed by the consolidated database, which made it possible to identify different types of actors (Figs. 7 and 8), and several

Fig. 5. Social media influencer's digital footprints (with his associates).

clusters with regards to the support of the influencer's views: committed supporters with a long history; new supporters who joined within the analyzed period; actors who do not share A. Navalny's views, but support the idea of "Smart Voting"; ideological opponents.

2 Results and Discussion

The analysis of the consolidated dataset for all topic blocks (see Fig. 1) revealed that the maximum weights of relations were those of lexical tags associated with "Smart Voting" (99) and "Investigation of the Anti-Corruption Fund (ACF) – vice-mayor" (82) (Biryukov, Sergunina). The above topics caused the maximum social tension of the actors in the network content during the pre-election period in the Moscow City Duma (September 8, 2019), which is explained by the general situation caused by the refusal to register and admit a number of opposition candidates to the Moscow City Duma. The incentives that define "Smart Voting" ensure the quantitative predominance of verbal content in the semantic core.

The rest of the topic blocks in calculating the level of social stress in the consolidated database are not represented at all.

Meanwhile, in the topic analysis of the consolidated database, the concepts that characterize the contrast between Moscow and the regions (the "Moscow feeds the regions" block) are prevailing, i.e. explicitly expressed information is mainly related to this topic.

Statements with markers with maximum relation weights:

(1) "... It's not Moscow that feeds Russia, but Russia that feeds Moscow..."

(2) "... 10 enterprises in Moscow and the Moscow region, and head offices of almost all largest Russian industrial holdings, as well as representative offices of the largest world companies that earn money in the regions and pay taxes in Moscow..."

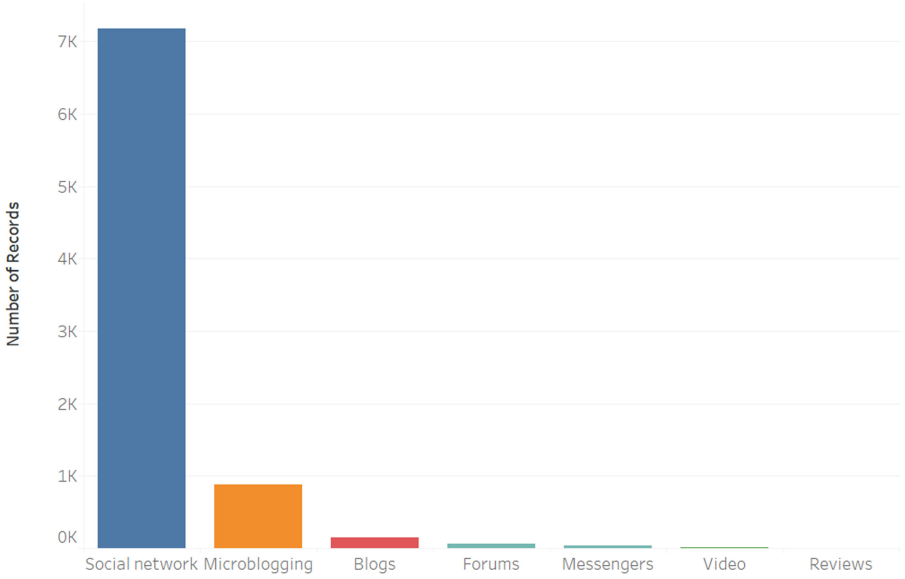

Fig. 6. Quantitative characteristics of user comments on social media influencer's posts on various resources.

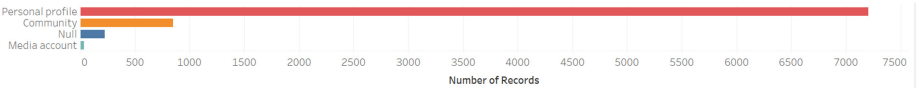

Fig. 7. Quantitative characteristics of messages of different types of users (personal profile, community, media account).

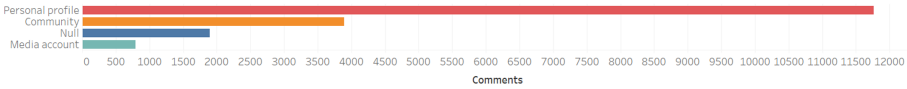

Fig. 8. Quantitative characteristics of comments of different types of users (personal profile, community, media account).

(3) "... the regions are not at the extreme of poverty, they merely survive... They are dying out)".

1.1. In the content devoted to the ACF investigations, the maximum relation weights are those of nominations with a negative connotation that characterize Deputy Mayor of Moscow Government for issues of housing maintenance and utilities and amenities Pyotr Biryukov (Biryukov (100), Master of Russia (Biryukov) (98), government official of the "experienced manager" type (89).

The users' attention was mostly attracted by the corruption element of P. Biryukov's activity, which is presented in the ACF investigation and is objectified as apartments and offices of the Biryukov family in Moscow (99):

(4) "Biryukov worked all his life as an official, but this did not prevent him from providing himself and his family with luxury real estate, luxury cars and a huge summer cottage-farm for a total of 5.5 billion rubles."

A set of concepts of the topic block defines a semantic field that describes the number and size of Biryukov and his family members' apartments and offices. The vice mayor's apartments and offices become, in the context of the discussion, a symbolic sign of corruption.

This topic block is characterized by the least number of denotations, but the maximum emotional intensity.

1.2. To analyze the hierarchy in inter-personal and intergroup communication due to the transition from lower permission levels of the world model to higher permission levels, datasets were selected containing users' posts and Alexei Navalny's posts as a social media influencer in this context. Alexey Navalny's posts from 01.09.2019, 03.09.2019, 04.09.2019, 06.09.2019, 07.09.2019 in VKontakte, Facebook and the blog were in the lead by user attention and received 1 770 comments (even without taking into account the content generated by the "Navalny Team").

Summarization of A. Navalny's posts enable identification of two main statements:

(5) "This day week, Putin, Medvedev, Sobyanin, Sergunin and that riot policeman who kicked a girl in the stomach with his fist will come to take their 90% of the seats in the Moscow parliament, St. Petersburg municipalities, city meetings of 22 regions of the country."

(6) "They need these 90% of the seats to claim continued unprecedented support."

1.3. Intergroup communication was analyzed on a consolidated database, which enabled identification of several clusters based on the support of the social media influencer's views:

- committed supporters with a long history;
- new supporters who joined during the analyzed period;
- actors who do not share A. Navalny's views, but support the idea of "Smart Voting";
- ideological opponents.

1.4. The topic structure of the actors' posts is a truncated form of the topic structure of A. Navalny's posts, reflects the secondary dependent nature of the content generated by users over the analyzed period.

Summarization of the actors' posts is a variation of the main topics proposed by the social media influencer:

(7) "Alexey Navalny posted on his blog a complete list of candidates to the Moscow City Duma recommended by the "Smart Voting"."

(8) "Alexey Navalny's strategy is the very same "smart voting"."

The analysis of the consolidated base of posts revealed that both interpersonal and intergroup communication (excluding the "ideological opponents" cluster) is a hierarchical system based on the pyramidal principle at the top of which stands the social media influencer, Alexey Navalny, who has the highest level of permission; he constructs and directs a communicative situation that allows transition of actors from lower permission levels of the world model to higher ones.

This position can also be confirmed by a semantic network of the actors' posts (Fig. 9).

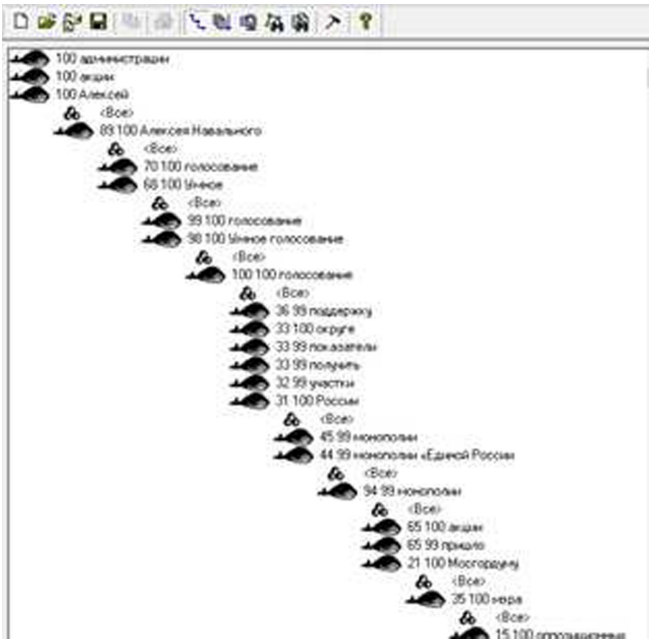

Fig. 9. Semantic network of ordinary actors' posts.

2.1. The analysis of the level of social stress regarding the "Smart Voting" topic block showed the highest relation weight among the markers characterizing the identification of the Moscow authorities and the country's authorities (negative connotation), as well as the markers characterizing the "Smart Voting" as an effective mechanism of struggle (positive connotation). About the method of calculating social stress (Kharlamov and Pilgun 2020):

(9) "Politician Aleksey Navalny is promoting the Smart Voting project, which aims to support average candidates from the parliamentary opposition in order to break the monopoly of United Russia in the Moscow City Duma."

2.2. The analysis of the semantic field associated with "Smart Voting", based on the users' comments showed an extremely negative attitude of the users to

power in general: the Mayor's Office is identified with United Russia and causes the maximum indignation of the actors. The protest against the election campaign in Moscow City Duma is associated with the protest against United Russia, the Russian authorities, and Sobyanin and the Mayor's Office are perceived as part of it, and therefore are actively condemned.

(10) "The "Smart Voting" will make it possible for everyone to vote together for a candidate who has the maximum chance of defeating pro-government "self-nominees" from "United Russia"."

2.3. Violation of legitimate legal procedures during the course of the election campaign and voting:

(11) "Falsified votes already in 10 districts".

2.4. The network contact demonstrates that the actors were ready for active actions (legally) if they were sure of their result, which contributed to the success of the "Smart Voting" tactics and extreme dissatisfaction with the actions of law enforcement agencies that violated legal methods, according to the actors. The "Smart Voting", according to the actors, provided an effective legal mechanism for the struggle with power, and therefore received maximum support. Users considered the "Smart Voting" to be the most effective form of protest.

(12) "Sobyanin withdrew independent candidates from the elections, put innocent people in jail, drove state employees to polling stations, but preliminary estimates still speak of the possible victory of the "Smart Voting."

2.5. Violation of legitimate procedures during the election campaign and the disproportionate actions of the security apparatus during the protests caused a sharp negative reaction and was an incentive for the activation of previously passive actors:

(13) "It is the attempts to intimidate the protesters that explain the initiative to increase fines for unauthorized meetings and to detain protesters for 72 h."

2.6. Justification of the actions of those detained during the protests (emphasis on the legitimacy and peaceful nature of the actions), since they tried to resist the illegitimate actions of law enforcement agencies. On the contrary, condemnation of the actions of judicial structures that violate legitimate procedures and their lack of professionalism:

(14) "... and freedom just does not come easy. They fight and die for freedom. It can last for decades."

3 Conclusion

The analysis of the network content made it possible to analyze the hierarchy in inter-personal and intergroup network communication, as well as the mechanisms of influence in social networks, transition from lower permission levels to higher ones. The expansion and enrichment of the users' world view in the network environment in the analyzed communicative situation occurs through spreading of a more developed and well-founded model of the world (segment of the model of the world), the carrier of which is a social media influencer with

the necessary set of knowledge, techniques, a high level of some assets, who is able to communicate current requirements.

Due to the transition from lower permission levels of the world model to higher permission levels in the digital media space, a significant number of actors begin to share the positions conveyed by an actor who is recognized in a particular communicative situation as an social media influencer.

In particular, analysis of the level of social stress indicates a growing misunderstanding, conflict between the leadership of Moscow and certain groups of the population.

The conflict is also reflected, in particular, in the opposition's "Smart Vote" protest campaign aimed at depriving the Pro-government United Russia party of votes in regional and Federal elections in Russia.

The degree of this misunderstanding is such that it will not be possible to solve the problem by simple means, such as organizing an additional information flow or expanding the dialogue between the authorities and the public after the protest actions in the summer of 2019. Before the protests during the election campaign in the Moscow City Duma in 2019, civil society had a clearly expressed expectation of a dialogue with the authorities, after which they expected particular political decisions and actions.

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