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A New Approach to Measuring Political and Social Polarisation in Developed Nations

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This research proposes and tests a novel method for measuring and analysing social polarization using network data from social media. Focusing on four target countries - Ireland, Belgium, Italy, and Japan - the research examines the non-political social networks of politically-engaged citizens, and calculates the degree of non-political polarization among them. Axes of polarization are identified in each country, and the types of account (media, entertainment, etc.) contributing most to that polarization are reported. Finally, a cross-national comparison reveals that while polarization exists in each country, the levels found in Ireland and Japan are very low compared to the extent of polarization in Belgium and Italy, both countries in which a social cleavage is well-documented.

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Social polarization has become a significant issue in recent years, with polarization between ordinary citizens holding different political values being connected to issues including populism, conspiracy theory beliefs, and the spread of "fake news". The growth in the popularity of social media platforms has led to the rapid diversification of citizens' sources of news and information, while a combination of self-selection and algorithmic effects on these platforms creates a "filter bubble" around users in which they are only exposed to information supportive of their existing biases, thus deepening the effects of polarization.

Despite significant research interest in this field in the past decade, several major obstacles remain to empirical analysis of the nature and causes of polarization. It remains difficult to make an empirical comparison between the extent or variety of polarization existing in different countries, as most methods for deriving variables for cross-national comparison, such as survey questions and expert assessments, are very susceptible to local socio-cultural effects when dealing with emotive topics such as polarization. Moreover, past efforts at quantifying polarization have generally focused only on political actors, rather than measuring affective and social polarization arising between ordinary citizens.

This study aims to address the problem of quantifying polarization among citizens by applying a network analysis approach to individuals' online social networks. By measuring the extent of the overlap between users' network choices in non-political realms (such as media, sports, entertainment, and so on), we can estimate the extent to which a user's political identity reflects divisions in non-political aspects of their life. This measurement gives us a clear picture of whether the supporters of two opposed political parties merely disagree politically while continuing to essentially live similar socio-cultural lives – or whether they have diverged from one another in non-political areas as well. By examining the especially polarized accounts in the data set, it is possible also to characterize the nature of the polarization – showing which fields of social and cultural life are especially divided along political lines.

The research was conducted in four countries – Italy, Belgium, Ireland, and Japan. The target countries are similar in some ways (they are all advanced democracies with high GNP and widespread social media adoption) while having relevant differences such as population size and the existence of a social cleavage (Belgium and Italy have well-documented divides; Ireland and Japan have no major social cleavages).

For each nation, a base population of politically engaged Twitter users was identified by gathering the Twitter accounts of every elected lawmaker and downloading the full list of

every account which follows them. Citizen accounts which followed at least five political accounts were used for analysis. 10,000 accounts were randomly sampled for each country, and a full list of the accounts which those randomly sampled citizens follow was downloaded. Each citizen account was assigned a political leaning based on the political accounts they follow. Overtly political accounts were removed, and Jaccard Distance was calculated between the citizen accounts on a pairwise basis. These represent the degree of dissimilarity between citizens' non-political social networks and were used as edge weights in the network.

For within-country analysis, citizen accounts were clustered according to political leaning, and distances between party groups were estimated. This made clear which political parties' followers had strongly overlapping non-political social networks and which had highly divergent networks. Next, the most-followed accounts in each cluster were analysed, using Craig's Zeta to find the accounts most uniquely associated to each party, to show which specific areas of non-political life are strongly polarised. For cross-national analysis, the overall scale of the "Twittersphere" (the baseline for how much difference we would expect to see between a given pair of users' following lists) was estimated on a per-country basis by calculating the mean Jaccard Distance among all users to use as a baseline value.

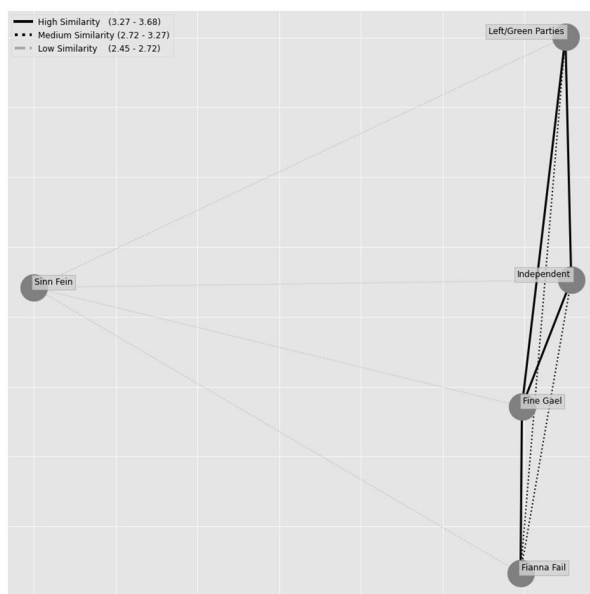Figures 1 through 4 show the primary results of the study for the four countries included.

Figure 1: Non-Political Polarization in Ireland

In Ireland, the most significant polarisation was between Sinn Fein (a republican / left-wing party often labelled as populist) and the traditional mainstream parties. Analysis of the accounts causing this polarisation revealed a major divide between citizens following media and government accounts from the Republic of Ireland, versus those following accounts from Northern Ireland.
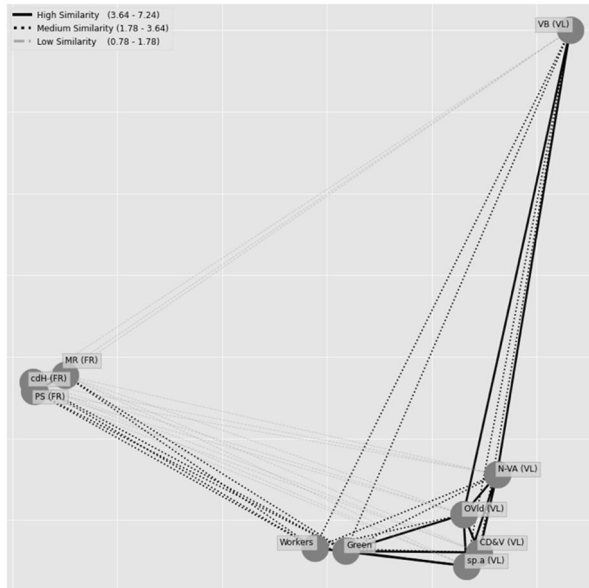
Figure 2: Non-Political Polarization in Belgium

In Belgium, a divide could be seen between the Walloon and Flemish parties, with the Green and Workers parties (which nominate candidates from both communities) being in the middle. There was also a divide between the populist Flemish party Vlaams Belang and the mainstream Flemish parties. Account-level analysis revealed linguistic polarization, in line with the social cleavage of Belgium. The divide between VB and the other Flemish parties was based on the propensity of VB supporters to follow foreign right-wing political figures.
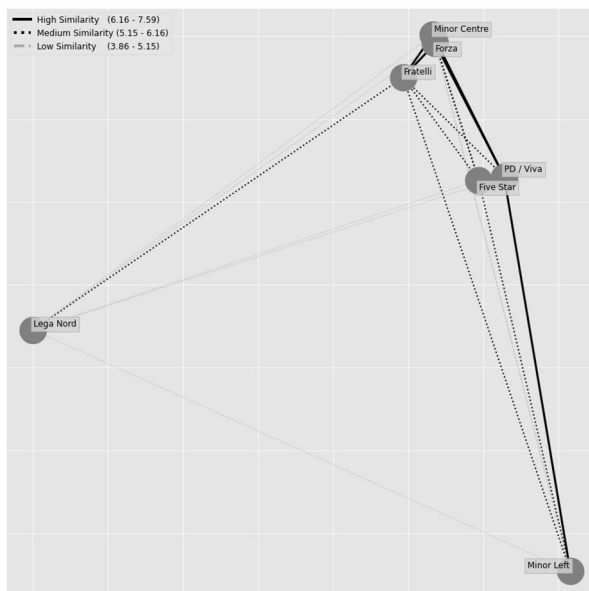

Figure 3: Non-Political Polarization in Italy

The results for Italy showed Lega Nord, a right-wing populist party, to be removed from the mainstream party group. Although Lega Nord is politically close to right-wing groups like Fratelli d'Italia and Forza Italia, cultural and geographical differences were seen among them. Lega Nord followers tended to follow different media, as well as different musicians, comedians, and actors; they also tended to follow accounts from the northern region of Lombardy, showing the importance of the party's geographic roots.
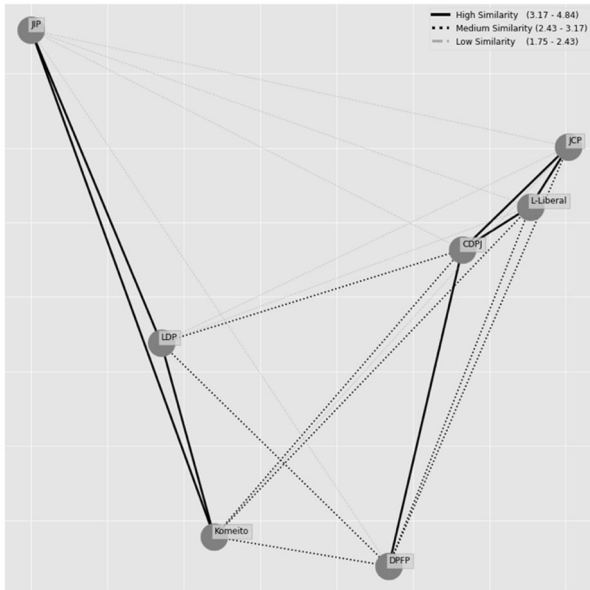
Figure 4: Non-Political Polarization in Japan

Polarization in Japan was found to divide opposition parties from the government coalition parties, with the center-right opposition Japan Innovation Party being aligned with the conservative cluster. Account-level analysis showed that activists, academics and authors were ranked highly among the polarizing accounts, with followers of the conservative parties also more likely to follow governmental accounts.
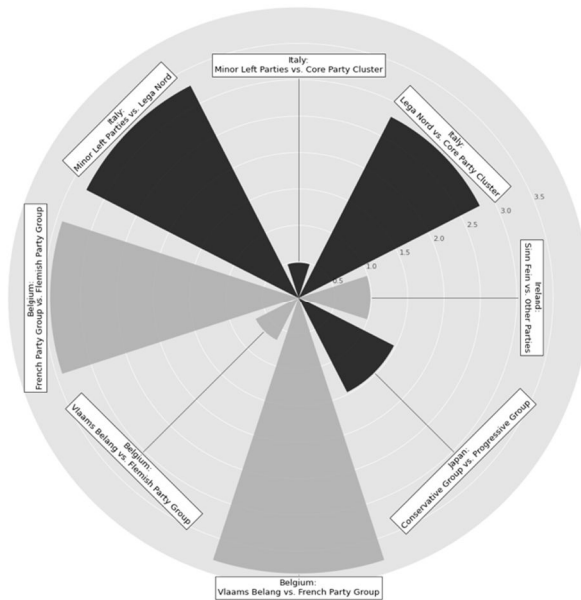

Figure 5: Cross-National Comparison of Polarization Levels

Finally, a cross-national comparison between the different countries was conducted. While the analysis for each country showed clear divisions, comparing these figures cross-nationally shows that not all measured polarization is of similar significance. Japan and Ireland show extremely low polarization overall. Belgium – with its deep cleavage between different communities within the country – has the highest level of overall polarization, while Italy's divide between Lega Nord and the other parties is of comparable scale.

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