Analyzing social networks in the European Parliament, and changes in the social network over time

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Abstract—We did a couple things to some graphs which contained data about social networks in the European Parliament.

Index Terms—Social networks, European Parliament.

I. INTRODUCTION

In this section, we introduce what the hell we're even talking about, we cite a couple earlier papers which we definitely read and got inspired from, we talk about previous results and so on.

We then talk about how the paper itself is organized, and very lengthily talk about whan kinds of stuff is contained in each section. This is of course for the reader's convenience, and definitely not an attempt to make this paper longer than it should be.

II. OUR DATA

Our dataset was acquired directly from the European Parliament's website. It is organized as a `csv` file which contains entries for each proposed amendment to a law, with information about when the amendment was proposed, some details about the amendment, and more importantly, information about who proposed the amendment, what party they belong to, which EP group said party belongs to, and which country are they are representative of.

This data can therefore be viewed as a bipartite graph, in which one part consists of the MEPs, and the other consists of the proposed amendments. An MEP and an amendment are joined by an edge if and only if said MEP contributed to the amendment (*sponsored* the amendment). Importantly, a single amendment may have multiple contributors, which allows us to analyze the social structure of the European Parliament as a whole.

In total, our dataset contains 750,578 entries, which is the total number of edges in this bipartite graph. The dataset has data on a grand total of 754 MEPs.

To analyze the social structure, we *projected* this bipartite graph onto the set of MEPs. This procedure creates a new graph, wherein the nodes represent MEPs, and each edge connects two MEPs which have two contributions in common. (I.e. they *co-sponsored* a bill.)

III. PRELIMINARY ANALYSIS

In this section, we talk about the conclusions we can draw from the data while analyzing it in its entirety.

IV. CHANGES TO THE SOCIAL NETWORK OVER TIME

In this section, we talk about how we divided the data based on time.

We divided our data based on time. Our goal was to make it possible to analyze the changes in the social environment based on time. We used major events that shaped European politics as breakpoints, because we expected that the social network might change drastically as a result of these events. The most important events we considered were the United Kingdom leaving the European Union (Brexit), on February 1st, 2019, and the start of the Russian invasion of Ukraine on February 24th, 2022. These events have undoubtedly shaped public opinion, and our research is centered around finding out whether they also influenced the social structure of the European Parliament.

Our dataset contained data from July 24th, 2019 to September 5th, 2022, and we divided this time interval into 12 parts. Our goal was to divide the time interval based on important events that happened during this time, in order to facilitate the study of how these events influenced the political network. For example, a major event in this time period was Brexit, since after Brexit, delegates from the United Kingdom left the European Parliament. We therefore divided our time interval in such a way that the date of Brexit is the endpoint of one of the parts. We did a similar thing for two more events in the specified time period. An important date we considered was the controversial Hungarian right-wing party Fidesz leaving the EPP political group inside the European Parliament, and we expected that this changed the dynamics between political groups. The last major event we considered was of course the start of the Russian invasion of Ukraine. Since our data ends in September 2022, we are unfortunately not able to analyze the effects of later phases of the war, notably the 2022 Kharkiv counteroffensive. In the future, we plan to continue our research to investigate whether the change in the dynamics of the war was able to further influence political networks in the European Parliament.

V. CONCLUSION

In conclusion, we can say that the social networks of the European Parliament are an ever-changing structure. Some

changes to it happen seemingly spontaneously, while some of them happen as a result of important events. The events that can have a noticeable effect on this social structure can be internal (such as Fidesz leaving the EPP group), or external, such as COVID-19, or the Russo-Ukrainian war.

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