Network Analysis of Parliamentary Debates
A case study on the UK House of Commons

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Aims and Objectives

☐ Represent and analyze deliberative processes

☐ How is the interaction structured? Who talks to whom? Why?

☐ Focus on the House of Commons debate transcripts

☐ ... and study those data using network theory

☐ Research questions:
  - Do MP consistently respond to MP with different opinions?
  - Can we detect any meaningful community
Building the Networks
If it is the case, as the Government continually say, that the French position was so uniquely influential, why did not the Government and the United States pursue the second resolution, which—if the Government have given us a true reflection of the Security Council's position—would show that the French were isolated?

Mr Tony Blair (Prime Minister; Sedgefield, Labour)

For the very reason that I have just given. If a member of the permanent five indicates to members of the Security Council who are not permanent members that whatever the circumstances it will veto, that is the way to block any progress on the Security Council. [Interuption.] With the greatest respect to whoever shouted out that the presence of the troops is working, I agree, but it is British and American troops who are there, not French troops.

The tragedy is that had such a resolution ensued and had the UN come together and united—and just British and American troops—Saddam Hussein might have complied. But the moment we canvassed support for an ultimatum, there was an immediate recourse to the language of the veto; postponement of action; the choice was action or no action at all.

Mr Llew Smith (Blaenau Gwent, Labour)

What does the Prime Minister mean by an "unreasonable veto"? Were the 30 occasions on which the UK has used the veto and the 75 occasions on which the US has used the veto reasonable or unreasonable?

Mr Tony Blair (Prime Minister; Sedgefield, Labour)

We can argue about each one of those vetoes in the past and whether they were reasonable or unreasonable, as follows. In resolution 1441, we said that it was Saddam's final opportunity and that he had to comply. That was agreed by all members of the Security Council. What is surely unreasonable is for a country to come forward now, at the very point when we might reach agreement and when we are—not unreasonably—saying that he has had these months without full compliance, on the basis of the six tests or action will follow. For that country to say that it will veto such a resolution in all circumstances is what I would call unreasonable.
(\[\cos(\theta) = \frac{\sum_{k=1}^{z} w_{ik} \times w_{jk}}{\sqrt{\sum_{k=1}^{z} w_{ik}^2} \times \sqrt{\sum_{k=1}^{z} w_{jk}^2}}\]

From the figures it can be seen that in both types of network the links are not labelled and nodes are labelled in a slightly different manner than in Chapter \(vi\) with the name of the node equal to the party affiliation of the MP and the MP’s voting profile. Recall that a voting profile records the voting behaviour of the MP in all the divisions following the debate represented by the network. See for instance Table \(wlo\) on the party affiliation and voting profile provides useful information as will be seen below to understand the patterns of interaction within the debate. The following two subsections consider the debates and the associated networks in more detail.

### Voting Profile Count

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<thead>
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<th>Voting Profile</th>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>105</strong></td>
</tr>
</tbody>
</table>

Table \(wlox\) Voting profile from the Iraq Debate

9.3.1 The approval of the invasion in Iraq debate networks

The interruption network for the Iraq debate consisted of nodes which represented all the MPs that participated in the debate except for the Speaker of the House and edges which represent the interactions among the MPs who interrupted whom at least once. Figure \(wls\) plots the degree distribution of the network. As might be expected highly connected nodes are fewer in number than poorly connected nodes.

The relevant interruption network for the Iraq debate consisted of nodes which represented all the MPs that participated in the debate. Disconnected nodes and the nodes representing the Speakers of the House who do not vote were not included. The network contains edges which represent the interactions amongst MPs who “intentionally” interrupt or are interrupted at least once. Figure \(wls\) plots the degree distribution of the network. Again, as expected, highly connected nodes are fewer in number than poorly connected nodes.

Note that the colour of the bars in the bar chart has been included for the purpose of clarity; no meaning should be attached to this colouring. As a natural question from Network Analysis view is checking whether the degree distribution of a network follows a powerlaw distribution. In Figure \(wlt\) the histograms of the degree distributions for the Iraq debate interruption network and the
Debate networks

- Parliamentary approval of the invasion of Iraq (18 March 2003)
- Parliamentary refusal of the invasion of Syria (29 August 2013)
- ‘Open’ and uncertain debates
- Large debates
Iraq debate: interruptions
Iraq debate: relevant interruptions
Syria debate: interruptions

5.1) Graph Communities using modularity maximization method:

- 9 clusters (C1=18, C2=17, C3=14, C4=13, C5=12, C6=11, C7=9, C8=8, C9=5)
Syria debate: relevant interruptions

Graph Communities using modularity maximization method:

9 clusters (C1 = 17, C2 = 12, C3 = 11, C4 = 7, C5 = 6, C6 = 5, C7 = 3, C8 = 2, C9 = 2)

Analysis
MPs talk consistently with MPs with different opinions

Disassortativity increases from interruption to relevant interruption networks for party, vice versa for voting profile

Speeches differentiate between parties more markedly in the Iraq debate rather than the Syria one
Iraq debate: communities

Figure 9.10: Communities in the relevant interruption network for the Iraq debate. The top left histogram presents the known communities (according to voting profile) while the rest of histograms present the detected communities (clusters predicted using modularity maximization, hierarchical and spectral clustering, edge centrality and k-Clique percolation algorithms). The colour coding is defined in the top left histogram.

Figure 9.9: Communities in the interruption network for the Iraq debate. The top left histogram presents the known communities (according to voting profile) while the rest of histograms present the detected communities (clusters predicted using modularity maximization, hierarchical and spectral clustering, edge centrality and k-Clique percolation algorithms). The colour coding is defined in the top left histogram.
Syria debate: communities

Figure 9.11: Communities in the interruption network for the Syria debate. The top left histogram presents the known communities (according to voting profile) while the rest of histograms present the detected communities (clusters predicted using modularity maximization, hierarchical and spectral clustering, edge centrality and k-Clique percolation algorithms). The colour coding is defined in the top left histogram.

Figure 9.12: Communities in the relevant interruption network for the Syria debate. The top left histogram presents the known communities (according to voting profile) while the rest of histograms present the detected communities (clusters predicted using modularity maximization, hierarchical and spectral clustering, edge centrality and k-Clique percolation algorithms). The colour coding is defined in the top left histogram.
Community detection

- Communities do not correspond to ‘natural’ communities (parties and voting profile)
- They consistently contain representatives from the two main voting profiles (and parties)
- They may be interpreted as identifying 'topics' or 'phases' in the debate
Thank you!
Figure 9.5: Degree distributions for the Iraq debate interruption network (top) and relevant interruption network (bottom). Each bar indicates the number of nodes (vertical axis) with respect to a given degree (horizontal axis).

Figure 9.7: Degree distribution for the Syria debate interruption network (top) and relevant interruption network (bottom). Each bar indicates the number of nodes (vertical axis) with respect to a given degree (horizontal axis).