

# Master Seminar Paper Outline

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## Introduction

Parties and their members in parliament often introduce bills as a way to communicate with their voters (Lazarus 2013, 215–216). By converting these bills into word embeddings – a method in natural language processing that represents the meaning of texts numerically – I can analyze party positions on various topics. This approach enables the examination of how parties' stances on issues converge or diverge over time.

## Research Question

Why do parties converge or diverge on a topic over time? In this paper, I will explore the reasons why a party introduces bills that are similar in content to those of another party.

## Academic and Societal Relevance

From an academic standpoint, the use of word embeddings in the context of political science research is relatively novel. Natural language processing in political science has focused on topic modelling and supervised machine learning in the past decade (Rodriguez and Spirling 2022, 4). Word embeddings can capture detailed linguistic information and, using appropriate data, are able to effectively represent party positions (Case 2023, 11; Rodriguez and Spirling 2022, 5).

On a societal level, considering the vast number of bills introduced in parliament, which are publicly accessible yet overwhelming in volume, this paper aims to distill a party's stance on issues, providing clarity on their positions relative to other parties. This approach can empower voters to make more informed decisions at the ballot box.

## Theories and Hypotheses

Parties adjust their policies in response to changes by other parties, especially those that are ideologically closer to them (Adams and Somer-Topcu 2009, 827–828). A topic's saliency

(Damore 2005) and public opinion on a topic (Lowry and Shipan 2002, 43) also play a role in whether parties converge on an issue. Convergence tends to intensify during election campaigns, as parties aim to match the views of the majority of voters (Spiliotes and Vavreck 2002, 250). Based on this understanding, I put forward two hypotheses:

### **Hypothesis 1**

The increased saliency of a topic leads to greater convergence among ideologically similar parties on that topic.

### **Hypothesis 2**

Topic convergence between parties is more pronounced in the run up to an election compared to phases between elections.

## **Approach and Structure of the Paper**

I will investigate bills related to environmental issues introduced in the Swiss Federal Assembly, focusing on bills put forward by the Social Democratic Party (SP) and the Green Party (GPS). These two parties are both left of center, thus ideologically close. I focus on environmental issues because this topic has increased in saliency over the past years, allowing to test the hypotheses.

My analysis utilizes data from the Swiss parliament, accessible through *swissparl* (Zumbach and Gföhler 2021). A bill's association with a party is determined by its author's party affiliation. Additionally, the Swiss parliament categorizes bills by topic, facilitating the extraction of bills concerning environmental issues.

To measure topic saliency, I will employ data from Google Trends,<sup>1</sup> a tool that enables the evaluation of public interest in specific search terms and topics (Nghiem et al. 2016, 10). Data are available from 2004 onwards.

I will retrieve parliamentary bills from 2004 to the latest data available (currently March 15, 2024). This time span contains several thousand bills, an amount that will be further clarified in the project's preliminary phase. Bills will be grouped based on their submission during the parliamentary "Session," a three-week meeting phase of the Swiss parliament, with at least four sessions held each year. The time frame under examination includes 100 sessions.

Using word embeddings, the content of a bill is transformed into a numeric value, placing the document within a high-dimensional vector space. In this space, bills that are close to each other are considered more similar in terms of content, whereas those positioned further apart are less similar. To determine a party's position on a topic, the average position of all bills introduced by that party on a topic is calculated. Thus parties closer to one another share more similarities in their positions, while those further apart have less in common.

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<sup>1</sup><https://trends.google.com/trends/>, retrieved 24 March 2024

Due to the limited size of the bill corpus, it is not feasible to train my own embeddings. Therefore, I plan to use pretrained models such as fastText<sup>2</sup> or GloVe.<sup>3</sup> The parliamentary bills are in German, thus German language models must be used, which are available for both fastText and GloVe. If technically possible, I aim to fine-tune these models to achieve more precise results.

The structure of this paper will follow the conventional format of a political science research paper. Following the introduction of the topic, there will be a literature review leading into a theoretical section, which concludes with the statement of my hypotheses. Subsequently, I will detail the methods and data employed to test these hypotheses. The paper will conclude with a discussion of the results and suggestions for future research.

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<sup>2</sup><https://fasttext.cc/>, retrieved 24 March 2024

<sup>3</sup><https://nlp.stanford.edu/projects/glove/>, retrieved 24 March 2024

## Literature

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