

# Using Language Models to Measure of Legislative Obstruction in the Canadian House of Commons

Mitchell Bosley

May 31, 2023

## **Abstract**

Obstruction—the use of procedural rights by legislative minorities to delay or outright block majority business—occurs in every legislature, but it is difficult to measure directly. Existing approaches use indicators such as the number of proposed amendments or motions to adjourn in a legislative session, and limit our ability to understand determinants of obstructive behavior at the level of individual legislators. In this paper, I propose a novel approach for capturing contextual and difficult-to-measure phenomena such as obstruction in legislative speech data using large language models. I provide a procedure for combining the capacity of GPT models to provide high dimensional annotations of long texts with the efficiency of RoBERTa models: first, use GPT to annotate legislative speeches according to a range of criteria that are indicative of obstruction, such as speech length, tone, as well as context from speeches that precede and follow it in the debate; then, use those annotations to train a RoBERTa model to distinguish between obstructive and non-obstructive speeches. To provide an initial validation of the capacity of GPT models to annotate political texts, I analyze a set of legislative debates from the 11th and 12th Parliaments of the Canadian House of Commons, a period during which extensive legislative obstruction from both the Liberal and Conservative parties culminated in the 1913 adoption of the closure rule to limit debate. I show that GPT-4’s annotations of the debates are highly consistent with human-coded judgements of the obstructiveness of debates, and discuss the implications of this approach for future research on obstruction and other difficult-to-measure phenomena in political science.

# 1 Introduction

Every legislature must decide at some point how to deal with obstructive minorities who use dilatory tactics to slow or outright halt the passage of legislation (Cox 2009), and a growing body of research has sought to explain when legislators obstruct, and when majorities change the rules to limit obstruction. Researchers have argued that obstruction *matters*, providing legislators the ability to extract policy concessions from majorities (Magleby and Reynolds 2017; Fong and Krehbiel 2018), make informative signals to the electorate (Patty 2016) and to other legislators (Dion et al. 2016), and fundamentally limiting the types of policies that can or cannot pass Krehbiel (1998).

In addition, research has shown that legislatures change the rules of the game to deal with obstructive minorities (Sieberer et al. 2020), and that these episodes of rule change are more likely to occur when workload increases (Cox 1987; Koger 2010), when legislative majorities are small (Dion 1997), cohesive (Binder 1997), and partisan (Goet 2019). In the cases of the early 19th century British House of Commons and US House of Representatives, anti-obstructionary rule changes have been argued to have radically centralized agenda-setting power into the hands of majority party elites (see Cox (1987, 61) and Cox and McCubbins (2005, 50), respectively.)

However, because obstructionary techniques vary across cases and over time, there is no standard technique for its measurement. Some measures count the use of certain procedures, such as the proportion of motions to adjourn and the total number of motions in the US House of Representatives (Binder 1996), and the proportion of *failed* motions to adjourn in the UK House of Commons (Goet 2019). Others use the frequency of newspaper reporting on obstructive episodes (Koger 2010), or simply assume that the threat of obstruction is higher when the rules permit obstruction and majority and minority parties are ideologically polarized (Sieberer et al. 2020).

The procedural counting approach taken by e.g. Binder (1997) and Goet (2019) has two key downsides. First, it is difficult to measure the rates at which individual legislators obstruct, and consequently, the extent to which anti-obstructionary rule changes actually affect the ability of an individual legislator to obstruct. Second, these measures may not pick up on legislators adopting new obstructionary techniques in the face of majority attempts to quell obstruction. As a result, these measures limit our ability to make comparisons of the rate of obstruction, both cross-case and over time. And while the newspaper article approach of Koger (2010) helps to address both of these

issues, relying on the subjective opinions of journalists as the basis of a measure of the prevalence of obstruction has its own problems for generalizability and comparison across cases.

What is needed, then, is a measure of obstruction that can be applied to individual legislators across cases and over time, and that can capture the changing nature of obstructionary techniques. I propose that a speech-based measure of obstruction can help to address these issues. By measuring the obstructionary content of individual speeches, we can capture the changing nature of obstructionary techniques, and by applying this measure to individual legislators, we can capture the changing rates of obstruction across cases and over time.

As a result of recent advances in machine learning – the advent of Large Language Models (LLMs), in particular – it is now possible to generate sophisticated, context-aware measures of speech. I therefore propose that we can use language models to help us measure obstruction, as well as other abstract and context-specific phenomena in legislative speech. I first use OpenAI’s GPT-4 to help with construction of the set of known obstructive and non-obstructive speeches from the 11th and 12th Parliaments of the Canadian House of Commons, a period during which both the Conservative and Liberal parties engaged in extensive obstruction, culminating in the 1913 adoption of the closure rule to limit debate by Robert Borden’s Conservative government. I do this by leveraging GPT-4’s ability to handle large context sizes and to perform multiple tasks simultaneously to score speeches and its immediate context (i.e., the preceding and following speeches) on a variety of criteria that are indicative of obstruction, including length, tone, and the presence accusations of obstruction. Using this training set, I then fine-tune a RoBERTa language model to distinguish between obstructive and non-obstructive speeches.

This paper proceeds as follows. In Section 2 I provide a non-technical of a language model-based approach to text classification, as well as propose a new method process for using language models to measure concepts such as obstructive speech in text. In Section 3, I describe an approach to measuring obstructive speech in legislatures that uses a scoring approach to capture indicators of obstruction both in the speech itself and in its immediate context within a debate. In Section 4, I show preliminary results from this coding scheme using OpenAI’s GPT-4 to a collection of speeches from the 11th and 12th Parliaments of the Canadian House of Commons. Finally, in Section 5, I conclude with a discussion of the results and next steps.

## 2 Large Language Models for Text Classification

### 2.1 The Transformer Architecture

The development of large language models (LLMs) has been driven by a series of innovations in machine learning, such as word embeddings, neural networks, and the Transformer architecture itself.

Word embeddings are dense vector representations of words that capture their semantic meaning in a continuous space. These representations are learned from large corpora of text data and have proven to be effective in various natural language processing tasks. Early word embedding techniques, such as Word2Vec (Mikolov et al. 2013) and GloVe (Pennington, Socher, and Manning 2014), enabled researchers to capture semantic relationships between words, providing an alternative to traditional one-hot encodings or bag-of-words representations.

Neural networks provided the foundation for increasingly complex models capable of learning from and generating text data (Elman 1990; Hochreiter and Schmidhuber 1997; Kim 2014). These advancements paved the way for the Transformer architecture (Vaswani et al. 2017) which combined the strengths of previous neural network models to create a powerful, scalable, and highly effective neural network for various NLP tasks, including text classification, machine translation, question answering, entity recognition, and summarization.

The Transformer architecture is composed of two main components: an encoder, which processes the input text by breaking it down into meaningful representations, and a decoder, which generates the output text based on these representations. The Transformer is based on a combination of self-attention mechanisms, which help the model focus on relevant parts of the text, and feed-forward layers, which process the information in a single direction without looping back. These components are organized in a stacked arrangement, forming multiple layers that enable the model to learn complex relationships between words. To account for the order of words in a sequence, the Transformer incorporates positional encoding, which adds information about the position of words, allowing the model to recognize and learn patterns based on word order. This design allows the Transformer to efficiently identify relationships between words in a sequence, regardless of their distance from one another. A main advantage of the Transformer architecture is that it can be highly parallelized, making it possible to train the model on large datasets. The larger scale is

crucial, as a key lesson from decades of machine learning research is the more, the better (Halevy, Norvig, and Pereira 2009).

## 2.2 Fine-tuning with large pretrained language models

BERT (Bidirectional Encoder Representations from Transformers) is a powerful language model based on the Transformer architecture’s encoder, designed for a wide range of natural language processing tasks, including text classification (Devlin et al. 2019) .

BERT is pre-trained with a *masked language modeling* objective, wherein a certain percentage of words in a sentence are masked, and the model is trained to predict the masked words based on their surrounding context. This pre-training step allows BERT to learn bidirectional contextual representations, as it must understand the context of words from both the left and right.

After pre-training, BERT models can be *fine-tuned*: the general language knowledge acquired pre-training supports the subsequent learning of specific tasks, such as text classification. During fine-tuning, the entire model is trained with a smaller learning rate to adapt the pre-trained representations to the specific task. This approach has proven effective across various NLP tasks, as the pre-trained knowledge can be transferred and fine-tuned to the target domain.

Several BERT-like models have emerged, offering variations and improvements over the original BERT architecture, with notable examples such as RoBERTa and DistilBERT.<sup>1</sup> Although there are hundreds of BERT-like models that have surpassed the originals’ performance on a variety of tasks, the basic pretrain-and-finetune paradigm remains dominant. These BERT-like models have contributed to advancements in text classification and other NLP tasks by leveraging the powerful bidirectional context encoding capabilities of the Transformer encoder, combined with domain-specific fine-tuning to achieve state-of-the-art performance.

## 2.3 In-context Learning with GPT Models

The Generative Pre-trained Transformer (Radford et al. 2018), or GPT, family of LLMs, such as GPT-3 (Brown et al. 2020) and GPT-4 (OpenAI 2023) are state-of-the-art autoregressive language

---

<sup>1</sup>RoBERTa (Robustly optimized BERT approach) proposed by improves upon BERT by modifying the training procedure and using larger mini-batches, longer training time, and removing a next sentence prediction task, leading to improved performance across a range of tasks (Liu et al. 2019). DistilBERT is a smaller, faster, and more efficient version of BERT, achieved through knowledge distillation. DistilBERT retains approximately 95% of BERT’s performance while reducing the model size by 40% and requiring 60% fewer computations (Sanh et al. 2019) .

models that perform exceptionally well across a wide range of natural language processing tasks, including text classification.

There are three critical differences between BERT and GPT families of models: their training objectives, the computational scale at which they are trained, and their prompt size. BERT class models are mostly trained using masked language modeling, where it predicts missing words in a sentence given their context.<sup>2</sup> GPT models, on the other hand, are trained exclusively to predict the next word in a sequence, a process also known as causal language modeling.

GPT model are also much larger than BERT models. For example, GPT-3 has 175 billion parameters, which is orders of magnitude larger than BERT’s 340 million parameters. The larger scale allows GPT-3 to capture more information from the vast amounts of data used during pretraining, which is estimated to be hundreds of gigabytes of text (Brown et al. 2020). The substantial scale of the data and computation used to train GPT-3 lead to “emergent” generalization behaviors. This scale difference also results in a considerable increase in computational cost for pretraining GPT-3 compared to BERT. This increased capacity allows GPT models to better utilize the available context window when processing text.

Larger context windows in GPT models enable more effective in-context learning. While the context window size is primarily determined by the model architecture and configuration, the model scale and training objective influence the model’s capacity to effectively utilize the context window. GPT models’ larger scale and unidirectional context learning from causal language modeling allow them to process longer sequences and better handle long-range dependencies.

The combination of the massive scale of the data and computation used to train the model with the causal model objective and increased context windows has made GPT models more adept at *generating* text given a prompt than BERT models, and has lead to “emergent” generalization behaviors. GPT-3 has demonstrated remarkable zero and few-shot learning abilities, meaning it can perform tasks without explicit fine-tuning or with only a few examples provided as context, and early indications are that GPT-4 is even more adept (Bubeck et al. 2023). To perform few-shot learning with GPT models, users provide examples of the desired input-output pairs as part of the prompt, which helps the model learn the format of the task and generate appropriate responses. The

---

<sup>2</sup>The original BERT was trained on both masked-language and next-sentence prediction tasks, but subsequent BERT-like models such as RoBERTa showed that dropping the next-sentence prediction task in favor of more masked-language modeling led to better results.

prompt can also include any additional context or instructions necessary for the model to complete the task.

## 2.4 Combining In-Context Learning and Fine-Tuning to Measure Concepts in Speech

The implication of GPT models' ability to perform zero and few-shot learning is that they can be used to perform a wide range of tasks without the need for explicit fine-tuning. In particular, the most capable GPT models (such as GPT-4) can be used to apply complex rule-based coding schemes to text, an annotation technique that previously was outside the scope of machine learning, and was only possible with human coders.

However, while GPT models are less expensive than human coders, they are still expensive to train and deploy relative to BERT-like models such as RoBERTa. The basic version of OpenAI's GPT-4, for example, costs \$0.03 USD per thousand tokens, which is equivalent to roughly six thousand words. Therefore, it is not feasible to use a model like GPT-4 to annotate large text corpora consisting of millions of words. It is, however, possible to use GPT-4 to annotate a small subset of the corpus, which can then be used to fine-tune a BERT-like model using the annotated data.

---

**Algorithm 1** Automated Annotation of Political Speech

---

**procedure** AUTOMATEDANNOTATION(*Speeches*, *CodingRules*, *ExpertAnnotations*)  
  1) **Annotate:** Use GPT to generate initial annotations of *Speeches* using *CodingRules*.  
  2) **Train Model:** Fine-tune BERT on the labeled dataset.  
  3) **Deploy Model:** Use the trained BERT model to annotate new speeches.  
  **Return:** Annotated speeches.  
**end procedure**

---

This approach is outlined in Algorithm 1. The procedure consists of three stages: (1) initial annotation of speeches with a GPT model, (2) using the GPT-annotated speeches to fine-tune a BERT model, and (3) deploying the trained BERT model on new speeches. The first stage is performed by using a GPT model to generate annotations of the speeches using a rule-based coding scheme. The second stage is performed by fine-tuning a BERT model on the GPT-annotated speeches. The final stage is performed by using the trained BERT model to annotate new speeches.

In the following sections, I will describe the coding scheme I develop to annotate political speech

in the Canadian House of Commons, and demonstrate how GPT-4 can be used to apply this coding scheme.

### 3 Measuring Obstruction in the Early 19th Century Canadian House of Commons

In 1913, a Conservative government under the leadership of Robert Borden changed the rules to allow closure by a simple majority vote. The Liberal minority had been obstructing the passage of a bill proposing 35 million dollars in naval aid to the United Kingdom for two straight weeks, principally by repeatedly amending and debating government bills.

By this point, a high degree of obstruction had become endemic in the Canadian Parliament, with both parties vociferously obstructing each-other during their respective time as minority. As Godbout (2020, 77) writes:<sup>3</sup>

[O]bstruction began to be seen as a tactic to obtain concessions from the government side. For example, before the adoption of the closure rule in 1913, members could discuss issues almost indefinitely on the floor of the House to prevent the adjournment of debates. In the most extreme cases, these debates could last for several days, or even lead to the dissolution of Parliament, as in 1896, when Parliament was dissolved over the Manitoba Schools Question, or in 1911, when the Conservative Party filibustered the adoption of a reciprocity trade agreement with the United States.

This period around the turn of the century is therefore ideal for measuring the phenomenon of obstruction in the Canadian House of Commons: we know that obstruction was a common tactic, and that legislators were sensitive to its use; we have a relatively clear understanding of what obstruction looks like (extended debate, repeated division, off topic speech); and thanks to the digitization of the Canadian Hansard (see <http://lipad.ca>), we have the complete, high quality text of every speech made during this period.

---

<sup>3</sup>For a thorough summary, see also Melrose (2003).



Mr. LANCASTER.(Conservative): Not at all. That hon. gentleman simply drew attention to a statement of the Minister of Customs (Mr. Paterson), which was utterly unfounded, and which he made while neglecting his duties in this House in order to take part in a local election. Had the hon. member for East Kent not interfered my hon. friend from Northumberland would have made his statement, which did not take him five minutes, we would have had the answer of the Minister of Finance and my reply, and we would have been in Supply an hour ago.

Figure 1: An example of an obstructive speech without context.

### 3.1 Identifying Obstructive Speech using Debate Context

The main challenge to the measurement of obstructive speech is that it is not straightforward to simply look at a speech and determine whether it is obstructive or not. While one can define obstruction as speech or action that is made with the intention of delaying government business, legislators who obstruct are unlikely to admit to doing so. Instead, they will often claim that they are merely trying to improve the bill, or that they are simply exercising their right to debate. As a result, an individual speech that is clearly part of an obstruction campaign may not contain any explicit indication of obstruction.

Consider, for example, the speech in Figure 1 from the 10th Parliament of the Canadian House of Commons.<sup>4</sup> The speaker, Mr. Lancaster, is using a critical tone, and is referring to a discussion about the time that a debate is taking up. However, these are not sufficient to determine whether the speech is obstructive, rather than simply critical of the government. However, if we look at the speech within its context, as in Figure 2, we can see that the speech is part of a larger debate about the time that a debate is taking up, that the speaker is a member of the opposition party, and that he is accused of obstructing government business by the majority party. That is, the additional context makes it more clear that Lancaster’s conduct is obstructive.

### 3.2 A Scoring Approach to Identifying Obstructive Speech

To determine whether a speech is obstructive, I use a scoring approach where I create a set of features that are likely to be associated with obstructive speech, and then create a score for each speech based on the presence or absence of these features. Table 1 lists the features that I use to

---

<sup>4</sup>For the complete exchange that the example speech is drawn from, see Appendix A

Mr. LANCASTER.(Conservative): Are these hon. gentlemen who interrupt not satisfied with that declaration of the Minister of Finance or are they convinced that he is talking nonsense when he says the majority have no rights in this House?

Mr. FIELDING.(Liberal): The hon. gentleman continues to repeat that I said the opposition had no rights. I said nothing of the kind. I said that every member of this House has the rights which the rules of the House, passed by the majority, give him.

Mr. LANCASTER.(Conservative): We had a lively discussion on that question, and the Minister of Finance said that we have no rights except what the majority chose to give us.

Mr. FIELDING.(Liberal): That is right.

Mr. LANCASTER.(Conservative): Now the hon. member for East Kent (Mr. Gordon) says our rights should be curtailed.

Mr. GORDON.(Liberal): We complain that you are abusing and going beyond your rights.

Mr. LANCASTER.(Conservative): If we have none at all how can we go beyond them? The Speaker could prevent our exercising any rights if we have none. When the Minister of Finance said that we have no rights he said what was not true, and now we have the hon. member for East Kent (Mr. Gordon) making a speech to prove that the Minister of Finance was all wrong in his statement and that the rights of the minority should be more curtailed than they are. But he is thus opening up a very large question indeed; and if that question be discussed until midnight, it is entirely his fault. [rest of speech omitted]

Mr. GORDON.(Liberal): Was it not the hon. member for Northumberland (Mr. Owen) who started the issue?

**Mr. LANCASTER.(Conservative): Not at all. That hon. gentleman simply drew attention to a statement of the Minister of Customs (Mr. Paterson), which was utterly unfounded, and which he made while neglecting his duties in this House in order to take part in a local election. Had the hon. member for East Kent not interfered my hon. friend from Northumberland would have made his statement, which did not take him five minutes, we would have had the answer of the Minister of Finance and my reply, and we would have been in Supply an hour ago. [rest of speech omitted]**

Figure 2: An example of an obstructive speech with debate-level context. Bolded text indicates the speech that was presented without context in Figure 1.

score speeches, and is divided into two sections. The first section contains features that are based on the speech itself, and the second section contains features that are based on the debate that the speech is part of. I assume a probabilistic relationship between the presence of each feature and the obstructiveness of a speech, where no individual feature is sufficient to determine whether a speech is obstructive, but the presence of multiple features is more likely to indicate that a speech is obstructive.

### 3.3 Annotation with GPT

The first step in the annotation procedure outlined in 1 is to use a GPT model to generate initial annotations of the texts. I take an in-context learning, or prompt-engineering, approach to annotation, where I provide the model with prompts comprised of 1) the set of coding rules, 2) the speech to be annotated, and the 3) representations of debate-level context.

I provide the model with the prompt described in Figures 3 and 4. Figure 3 shows how I provide the coding rules from Table 1 to the model, while Figure 4 shows how I provide the speech to be annotated and its surrounding context. Finally, Figure 5 shows an example of GPT-4's output: a JSON (JavaScript Object Notation) object containing the model's coding for each of the 15 features, as well as brief justification for its choices.

The GPT-4 coding of the Lancaster speech yields a score of 12 out of a possible 15, indicating that the speech contains many features that we would expect to be associated with obstructive speech. The model's justifications for its choices are also consistent with our expectations. For example, the model indicates that the speech contains negative sentiment, oppositional tone, attacks, repetitive content, and an accusation of obstruction. The model also indicates that the speech contains a suggestion for amendment, series of questions, and escalation attempts, which is consistent with my reading of the speech given its context.

## 4 Validation

To validate my proposed approach, I find a series of debates where members of the majority party (the Liberals up until November 1911, and the Conservatives thereafter) repeatedly accuse the minority party of wilfully obstructing government business. Using these debates, as well as a set

Feature	Description
<i>Speech-Level Features</i>	
LengthySpeech	Does the speaker talk extensively?
NegativeSentiment	Does the speaker express a negative sentiment?
OppositionalTone	Is the speaker’s tone adversarial?
Attacks	Does the speaker strongly criticize specific individuals or groups?
RepetitiveContent	Does the speaker repeat certain points?
Amendments	Does the speaker suggest changes to proposals?
SeriesOfQuestions	Does the speaker ask a sequence of questions?
EscalationAttempts	Does the speaker try to intensify the situation?
OffTopicContent	Does the speaker deviate from the main topic?
ContradictsPreviousSpeakers	Does the speaker contradict the statements made by earlier speakers?
ObstructionAccusation	Does the speaker directly or indirectly accuse others of obstructing, delaying, or misusing their rights?
Interruptive	Does the speaker interrupt others?
<i>Context-Level Features</i>	
OthersAccuseObstruction	Have others accused the speaker directly or indirectly of obstructing, delaying, or misusing their rights?
CollectiveObstructionPatterns	Are there noticeable patterns of collective obstruction, such as frequent interruptions or points of order from a certain group of people?
FrequentPointsOfOrder	Have there been procedural interruptions?

Table 1: **Description of Speech and Context-Level Features Used to Score Obstructiveness of Speeches.** The features are divided into two categories: speech-level features and context-level features. Speech-level features are those that are directly related to the content of the speech, while context-level features are those that are related to the debate that the speech is part of. The score that is used to determine whether a speech is obstructive is the sum of the presence of each feature, where the presence of each feature is indicated by a 1 and the absence of each feature is indicated by a 0.

Please evaluate the provided speech and its surrounding context in terms of the following criteria:

Speech-level Features:

- "LengthySpeech": Does the speaker talk extensively?
- "NegativeSentiment": Does the speaker express a negative sentiment?
- "OppositionalTone": Is the speaker's tone adversarial?
- "Attacks": Does the speaker strongly criticize specific individuals or groups?
- "RepetitiveContent": Does the speaker repeat certain points?
- "Amendments": Does the speaker suggest changes to proposals?
- "SeriesOfQuestions": Does the speaker ask a sequence of questions?
- "EscalationAttempts": Does the speaker try to intensify the situation?
- "OffTopicContent": Does the speaker deviate from the main topic?
- "ContradictsPreviousSpeakers": Does the speaker contradict the statements made by earlier speakers?
- "ObstructionAccusation": Does the speaker directly or indirectly accuse others of obstructing, delaying, or misusing their rights?
- "Interruptive": Does the speaker interrupt others?

Context-level features;

- "OthersAccuseObstruction": Have others accused the speaker directly or indirectly of obstructing, delaying, or misusing their rights?
- "CollectiveObstructionPatterns": Are there noticeable patterns of collective obstruction, such as frequent interruptions or points of order from a certain group of people?
- "FrequentPointsOfOrder": Have there been procedural interruptions?

Generate a JSON object with above properties as keys. The values should be arrays containing a brief explanation of the evaluation, followed by a boolean value indicating the presence or absence of the feature.

-----

PRIOR SPEECHES: [prior speeches here]  
SPEECH TO CLASSIFY: [speech to classify here]  
SPEECHES AFTER: [speeches after here]

JSON OUTPUT:

Figure 3: Prompt to provide to GPT model to generate data annotations. An example of how the speeches are presented is shown in Figure 4. An example of the JSON output is shown in Figure 5.

PRIOR SPEECHES:

Mr. LANCASTER.(Conservative): Are these hon. gentlemen who interrupt not satisfied with that declaration of the Minister of Finance or are they convinced that he is talking nonsense when he says the majority have no rights in this House?

Mr. FIELDING.(Liberal): The hon. gentleman continues to repeat that I said the opposition had no rights. I said nothing of the kind. I said that every member of this. House has the rights which the rules of the House, passed by the majority, give him.

Mr. LANCASTER.(Conservative): We had a lively discussion on that question, and the Minister of Finance said that we have no rights except what the majority chose to give us.

Mr. FIELDING.(Liberal): That is right.

Mr. LANCASTER.(Conservative): Now the hon. member for East Kent (Mr. Gordon) says our rights should be curtailed.

Mr. GORDON.(Liberal): We complain that you are abusing and going beyond your rights.

SPEECH TO CLASSIFY:

Mr. LANCASTER.(Conservative): If we have none at all how can we go beyond them? The Speaker could prevent our exercising any rights if we have none. When the Minister of Finance said that we have no rights he said what was not true, and now we have the hon. member for East Kent (Mr. Cordon) making a speech to prove that the Minister of Finance was all wrong in his statement and that the rights of the minority should be more curtailed than they are. But he is thus opening up a very large question indeed; and if that question be discussed until midnight, it is entirely his fault. [rest of speech omitted]

SPEECHES AFTER:

Mr. GORDON.(Liberal): Was it not the hon. member for Northumberland (Mr. Owen) who started the issue?

Mr. LANCASTER.(Conservative): Not at all. That hon. gentleman simply drew attention to a statement of the Minister of Customs (Mr. Paterson), which was utterly unfounded, and which he made while neglecting his duties in this House in order to take part in a local election. Had the hon. member for East Kent not interfered my hon. friend from Northumberland would have made his statement, which did not take him five minutes, we would have had the answer of the Minister of Finance and my reply, and we would have been in Supply an hour ago. [rest of speech omitted]

JSON OUTPUT:

Figure 4: An example of how the speeches are presented to the GPT agent.

```

{
"Speech-level Features": {
  "LengthySpeech": ["The speech is lengthy with extensive content and
arguments presented by the speaker.", true],
  "NegativeSentiment": ["The speaker expresses negative sentiment towards
the Minister of Finance and the member for East Kent, accusing them of
dishonesty and obstructing supply.", true],
  "OppositionalTone": ["The speaker adopts an oppositional tone towards
the Minister of Finance and the member for East Kent.", true],
  "Attacks": ["The speaker targets specific individuals (the Minister
of Finance and the member for East Kent) with criticism.", true],
  "RepetitiveContent": ["The speaker repeats his point about the need
for concrete amendments and accusations of obstruction.", true],
  "Amendments": ["The speaker suggests that an amendment should have been
moved to clarify the proposals.", true],
  "SeriesOfQuestions": ["The speaker asks a sequence of questions primarily
aimed at criticizing the opposing members.", true],
  "EscalationAttempts": ["The speaker attempts to escalate the situation by
continuously accusing the opposing members of misconduct.", true],
  "OffTopicContent": ["The speaker stays on topic throughout his speech,
consistently addressing the rights of the minority and the actions of the
opposing members.", false],
  "ContradictsPreviousSpeakers": ["The speaker contradicts the statements
made by the Minister of Finance and the member for East Kent from previous
speeches.", true],
  "ObstructionAccusation": ["The speaker directly accuses the member for
East Kent of obstructing Supply.", true],
  "Interruptive": ["There is no evidence that the speaker interrupts others
in this specific speech.", false]
},
"Context-level features": {
  "OthersAccuseObstruction": ["The member for East Kent accused Mr. Lancaster
and his party of going beyond their rights in a previous speech, which could
be considered as an indirect accusation of obstruction.", true],
  "CollectiveObstructionPatterns": ["While there isn't a clear pattern of
collective obstruction, there are several points of contention and
accusations going back and forth between members.", true],
  "FrequentPointsOfOrder": ["There are no explicit procedural interruptions in
the provided context.", false]
}
}

```

Figure 5: An example of the JSON output generated by the GPT agent.

from a randomly selected set of debates in which no such accusations occurred. The goal, then, is to provide a sanity check: does applying my coding scheme to a set of legislative speeches in which I am confident there is at least some obstruction yield estimates of obstruction that have face validity? And conversely, does applying my coding scheme to a set of legislative speeches in which I am confident there is no obstruction yield false positives?

Towards this goal, I choose the following debates for my validation set:

1. Unambiguously obstructive: A June 5th, 1908 debate where a group of (then minority) Conservative MPs are holding up the House of Commons moving into Committee of Supply by business by discussing a Globe news article that accused the Conservatives of obstructive government business. The Conservatives are repeatedly accused of obstruction by the governing Liberals, after which Mr. Lancaster, a Conservative MP, talks at length until past midnight.<sup>5</sup>
2. Moderately obstructive: A February 26th, 1912 debate where a Liberal MP (the minority party) move to adjourn the house in order to call attention to “the inadequacy of the train service for the transportation’ of passengers between Prince Edward Island and the mainland.” There is some fracas as to who has the right to speak, but the Conservative Minister of Railways and Canals promises to look into the problem, and the debate ends quickly.<sup>6</sup>
3. Constructive, good natured debate over proposed legislation: A March 21, 1910 committee discussion over a piece of legislation that would affect the rights afforded to members of an association of millers. Members of the opposition make good-faith criticisms over what they see as improvements that could be made to the bill, and the majority considers their proposals.<sup>7</sup>
4. Unambiguously unobstructive: A May 18th, 1911 debate where both Conservative (minority) and Liberal (majority) MPs amicably discuss the causes and solutions to a delay in the mail from Montreal to Rimouski.<sup>8</sup>

---

<sup>5</sup>For the full debate, see <https://lipad.ca/full/1908/06/05/5/>

<sup>6</sup>For the full debate, see [<https://lipad.ca/full/1912/02/26/18/>]

<sup>7</sup>For the full debate, see <https://lipad.ca/full/1910/03/21/5/#297468>

<sup>8</sup>For the full debate, see <https://lipad.ca/full/1911/05/18/43/#345602>



To generate obstruction scores for each speech in each debate, I use OpenAI’s GPT-4 algorithm to generate a JSON file containing the speech-level and context-level features for each speech in each debate, as described in Section 3.3. I cross-reference the generated JSON file with the original Hansard text to ensure that the GPT-4 algorithm has correctly annotated each speech.<sup>9</sup> I then calculate the per-speech obstruction score as the sum of the boolean values for each feature, so that a speech with a score of 5 has 5 features that are identified, and a speech with a score of 0 has none. I then plot the distribution of obstruction scores for each debate in Figure 4.

My expectation is that the first debate will yield the highest obstruction score, the second the second highest, the third the second lowest, and the fourth the lowest. Figure 4 largely bears this out: the first, obviously obstructive debate has by far the highest concentration of high obstruction scores, while the second, moderately obstructive debate has the second highest concentration of high obstruction scores. The third debate, where both parties are debating in good faith, has the lowest concentration of high obstruction scores. The only deviation from my expectations is the fourth debate, which has a higher concentration of high obstruction scores than the third debate.

## 5 Discussion and Conclusion

In this paper, I have proposed a novel approach to measuring obstruction in legislatures using LLMs such as BERT and GPT. Specifically, I argued that we can use GPT models such as GPT-4 to identify obstruction by scoring speeches on a range of features that are characteristic of obstruction. I then showed that this approach yields face-valid results when applied to a set of debates where obstruction is known to have occurred, and a set of debates where obstruction is known not to have occurred.

There are several clear avenues for future research. First, I will apply this approach to a larger set of debates, both within the Canadian House of Commons and in other legislatures, such as the British House of Commons, as my ultimate goal is to create a general purpose obstruction detection procedure that can be applied to any legislative speech. Second, I will properly implement the method outlined in Algorithm 1 of using GPT-based annotation to train BERT models in order to make this approach more cost efficient – running the GPT-4 models for this paper cost nearly \$10

---

<sup>9</sup>In almost all cases, I agree with the GPT-4 algorithm’s annotations.

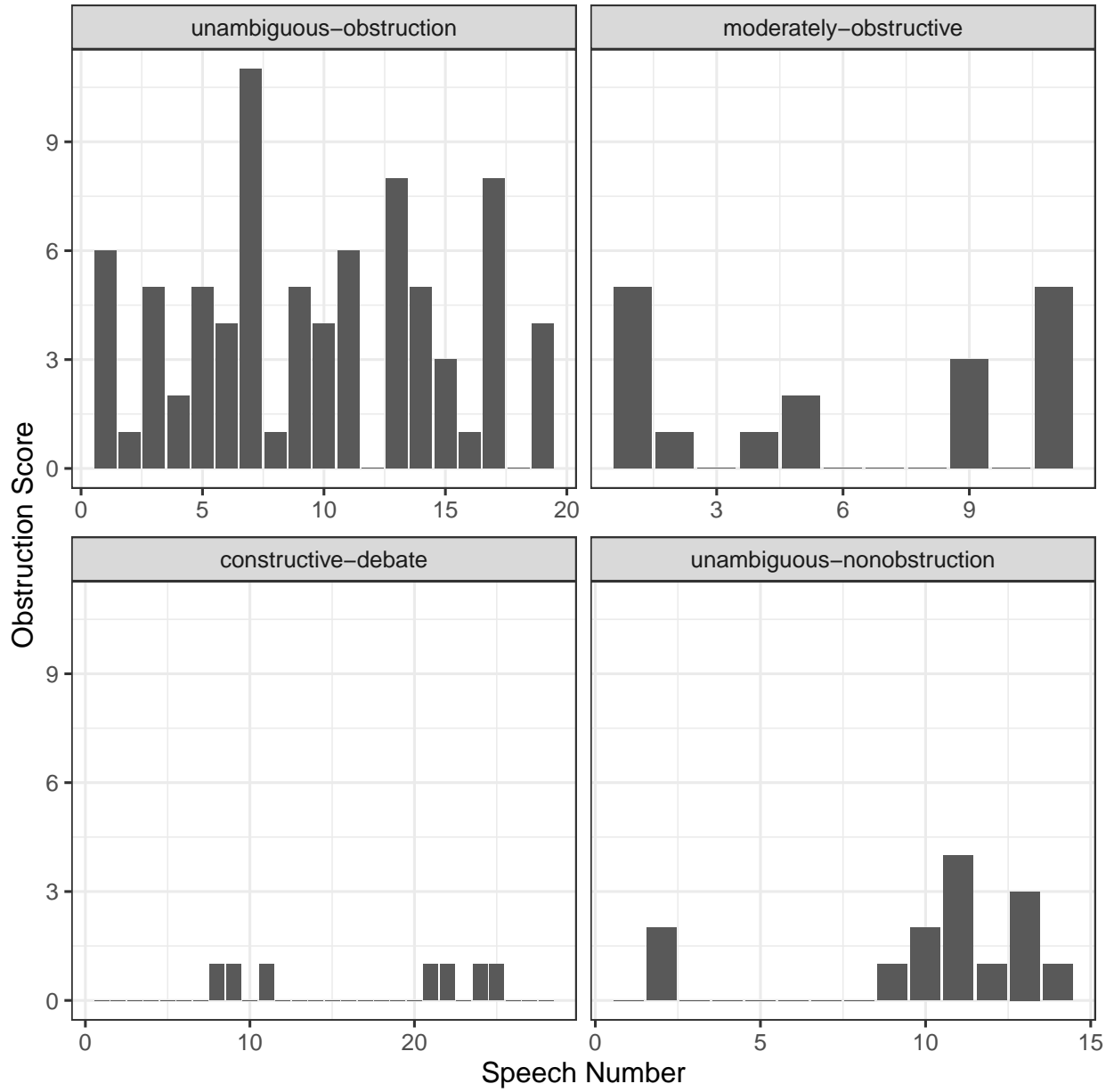


Figure 6: Obstruction scores for the each speech in each debate in the validation set.

USD, and so labeling thousands (or even hundreds) of debates in this fashion would quickly become prohibitively expensive.

In addition, I plan to explore more systematic ways of identifying and correcting for the bias in the GPT-4 model. That is, we should not just blindly trust the GPT-4 model to identify obstruction (or other similar phenomena), but should instead identify the features that the GPT-4 model is most likely to misidentify, and correct for this bias.

Finally, I plan to explore the use of open-source alternatives to GPT-4. While GPT-4 is the most powerful LLM currently available, it is subject to the limitations of being a proprietary model: OpenAI can, for example, choose to make fundamental changes to or revoke access to the model at any time, making research that relies on GPT-4 less reproducible.

While these are obviously preliminary results, the face-validity of the results is promising. More work is needed to validate this approach, but I believe that a GPT-based approach to measuring political phenomena has the potential to revolutionize the way we study political speech.

## 6 References

- Binder, Sarah A. 1996. “The Partisan Basis of Procedural Choice: Allocating Parliamentary Rights in the House, 1789-1990.” *The American Political Science Review* 90 (1): 8–20. <https://doi.org/10.2307/2082794>.
- . 1997. *Minority Rights, Majority Rule: Partisanship and the Development of Congress*. Cambridge, U.K. ; New York, NY, USA: Cambridge University Press.
- Brown, Tom B, Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared Kaplan, Prafulla Dhariwal, Arvind Neelakantan, et al. 2020. “Language Models Are Few-Shot Learners.” *Arxiv Preprint Arxiv:2005.14165*. <https://arxiv.org/abs/2005.14165>.
- Bubeck, Sébastien, Varun Chandrasekaran, Ronen Eldan, Johannes Gehrke, Eric Horvitz, Ece Kamar, Peter Lee, et al. 2023. “Sparks of Artificial General Intelligence: Early Experiments with GPT-4.” <https://arxiv.org/abs/2303.12712>.
- Cox, Gary W. 1987. *The Efficient Secret: The Cabinet and the Development of Political Parties in Victorian England*. Political Economy of Institutions and Decisions. Cambridge ; New York: Cambridge University Press.
- . 2009. *The Organization of Democratic Legislatures*. Edited by Donald A. Wittman and Barry R. Weingast. Vol. 1. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199548477.003.0008>.
- Cox, Gary W., and Mathew D. McCubbins. 2005. *Setting the Agenda: Responsible Party Government in the US House of Representatives*. Cambridge University Press.
- Devlin, Jacob, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. 2019. “BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding.” *Arxiv:1810.04805 [Cs]*, May. <https://arxiv.org/abs/1810.04805>.
- Dion, Douglas, Frederick J. Boehmke, William MacMillan, and Charles R. Shipan. 2016. “The Filibuster as a War of Attrition.” *The Journal of Law and Economics* 59 (3): 569–95. <https://doi.org/10.1086/690223>.
- Dion, George. 1997. *Turning the Legislative Thumbscrew: Minority Rights and Procedural Change in Legislative Politics*. Ann Arbor, MI: University of Michigan Press. <https://doi.org/10.3998/mpub.14912>.

- Elman, Jeffrey L. 1990. "Finding Structure in Time." *Cognitive Science* 14 (2): 179–211.
- Fong, Christian, and Keith Krehbiel. 2018. "Limited Obstruction." *American Political Science Review* 112 (01): 1–14. <https://doi.org/10.1017/S0003055417000387>.
- Godbout, Jean-François. 2020. *Lost on Division: Party Unity in the Canadian Parliament*. University of Toronto Press.
- Goet, Niels D. 2019. "The Politics of Procedural Choice: Regulating Legislative Debate in the UK House of Commons, 1811–2015." *British Journal of Political Science*, September, 1–19. <https://doi.org/10.1017/S0007123419000188>.
- Halevy, Alon, Peter Norvig, and Fernando Pereira. 2009. "The Unreasonable Effectiveness of Data." In *IEEE Intelligent Systems*, 24:8–12. IEEE.
- Hochreiter, Sepp, and Jürgen Schmidhuber. 1997. "Long Short-Term Memory." *Neural Computation* 9 (8): 1735–80.
- Kim, Yoon. 2014. "Convolutional Neural Networks for Sentence Classification." In *Proceedings of the 2014 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 1746–51.
- Koger, Gregory. 2010. *Filibustering: A Political History of Obstruction in the House and Senate*. Chicago: The University of Chicago Press.
- Krehbiel, Keith. 1998. *Pivotal Politics: A Theory of U.S. Lawmaking*. Chicago: University of Chicago Press.
- Liu, Yinhan, Myle Ott, Naman Goyal, Jingfei Du, Mandar Joshi, Danqi Chen, Omer Levy, Mike Lewis, Luke Zettlemoyer, and Veselin Stoyanov. 2019. "RoBERTa: A Robustly Optimized BERT Pretraining Approach." *Arxiv Preprint Arxiv:1907.11692*. <https://arxiv.org/abs/1907.11692>.
- Magleby, Daniel B., and Molly E. Reynolds. 2017. "Putting the Brakes on Greased Wheels: The Politics of Weak Obstruction in the United States Senate." *Congress & the Presidency* 44 (3): 344–68. <https://doi.org/10.1080/07343469.2017.1360964>.
- Melrose, Erin. 2003. "Limiting Parliamentary Debate:," 25.
- Mikolov, Tomas, Ilya Sutskever, Kai Chen, Greg S Corrado, and Jeff Dean. 2013. "Distributed Representations of Words and Phrases and Their Compositionality." In *Advances in Neural Information Processing Systems*, 3111–19.
- OpenAI. 2023. "GPT-4 Technical Report." <https://arxiv.org/abs/2303.08774>.

- Patty, John W. 2016. "Signaling through Obstruction," 16.
- Pennington, Jeffrey, Richard Socher, and Christopher D Manning. 2014. "GloVe: Global Vectors for Word Representation." In *Proceedings of the 2014 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 1532–43.
- Radford, Alec, Karthik Narasimhan, Tim Salimans, and Ilya Sutskever. 2018. "Improving Language Understanding by Generative Pre-Training." *Arxiv Preprint Arxiv:1802.05365*. <https://arxiv.org/abs/1802.05365>.
- Sanh, Victor, Lysandre Debut, Julien Chaumond, and Thomas Wolf. 2019. "DistilBERT, a Distilled Version of BERT: Smaller, Faster, Cheaper and Lighter." In *NeurIPS 2019 Workshop on Machine Learning for Systems*.
- Sieberer, Ulrich, Julia F. Dutkowski, Peter MEIßNER, and Wolfgang C. Müller. 2020. "'Going Institutional' to Overcome Obstruction: Explaining the Suppression of Minority Rights in Western European Parliaments, 1945-2010." *European Journal of Political Research*, February, 1475–6765.12376. <https://doi.org/10.1111/1475-6765.12376>.
- Vaswani, Ashish, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser, and Illia Polosukhin. 2017. "Attention Is All You Need." *Arxiv:1706.03762 [Cs]*, December. <https://arxiv.org/abs/1706.03762>.

## A Obstructive Example

The following is an excerpt from an obstructive episode, that took place on June 5th, 1908,<sup>10</sup> when the Liberals were the majority party. In this exchange, Mr. Lancaster, a Conservative MP, talks at length in a critical tone. He is accused of obstruction by several Liberal MPs.

Mr. LANCASTER.(Conservative (1867-1942)): Are these hon. gentlemen who interrupt not satisfied with that declaration of the Minister of Finance or are they convinced that he is talking nonsense when he says the majority have no rights in this House?

Mr. FIELDING.(Liberal): The hon. gentleman continues to repeat that I said the opposition had no rights. I said nothing of the kind. I said that every member of this House has the rights which the rules of the House, passed by the majority, give him.

Mr. LANCASTER.(Conservative (1867-1942)): We had a lively discussion on that question, and the Minister of Finance said that we have no rights except what the majority chose to give us.

Mr. FIELDING.(Liberal): That is right.

Mr. LANCASTER.(Conservative (1867-1942)): Now the hon. member for East Kent (Mr. Gordon) says our rights should be curtailed.

Mr. GORDON.(Liberal): We complain that you are abusing and going beyond your rights.

Mr. LANCASTER.(Conservative (1867-1942)): If we have none at all how can we go beyond them? The Speaker could prevent our exercising any rights if we have none. When the Minister of Finance said that we have no rights he said what was not true, and now we have the hon. member for East Kent (Mr. Gordon) making a speech to prove that the Minister of Finance was all wrong in his statement and that the rights of the minority should be more curtailed than they are. But he is thus opening up a very large question indeed; and if that question be discussed until midnight, it is entirely his fault. The hon. gentleman said, on the motion to go into Supply, that he had an important question to bring up which should be settled. But he did not move any amendment,

---

<sup>10</sup>For the whole debate, see <https://lipad.ca/full/1908/06/05/5/>

and therefore we are completely in the dark as to what method he proposes to curtail our rights. I apprehend that he himself has been taking up the attention of the House simply for the purpose of obstructing Supply. When he talks of preventing members of the opposition from discussing matters which are properly before the House, he should have backed up his speech by a motion so that we might have some idea of what he proposes this House should do in order to accomplish the object he aims at. He should have moved an amendment in concrete form and in not doing so he has been guilty of discourtesy to this House. He urged that before going into Supply, the rules of the House should be amended. In this way he was obstructing Supply, and yet he does not submit any motion which would indicate exactly in what way he proposes to curtail our rights. And while raising such an important discussion and thus taking up valuable time, he expressed the hope that this discussion would not delay the House too long. But if he were sincere in not desiring to waste the time of the House, why did he not move an amendment so that we might know what he means? Possibly the hon. gentleman is one of those many members from the province of Ontario who are convinced that their usefulness as members of this House has gone and that they stand no chance, or very little chance, of being reelected. Possibly he feels that he cannot expect re-election if he undertakes any longer to support this government through thick and thin, and therefore is seeking a pretext which will enable him to go before his electors and claim that he is not backing up the government in everything. True the government were complaining that the opposition were preventing Supply going through, but the hon. gentleman wants to be able to say that he has acted as an independent and was not going any longer to follow the Laurier government in that regard. How else can we account for the fact that when the government is asking for Supply, we find him raising such an important question now as that affecting the rights of members of this House to criticise the conduct of the government. For my part I protest against the hon. gentleman arguing that the rules should be amended and then sitting down without putting his ideas into the concrete form of an amendment to the motion to go into Supply.

Mr. GORDON.(Liberal): Was it not the hon. member for Northumberland (Mr. Owen)



who started the issue?

Mr. LANCASTER.(Conservative (1867-1942)): Not at all. That hon. gentleman simply drew attention to a statement of the Minister of Customs (Mr. Paterson), which was utterly unfounded, and which he made while neglecting his duties in this House in order to take part in a local election. Had the hon. member for East Kent not interfered my hon. friend from Northumberland would have made his statement, which did not take him five minutes, we would have had the answer of the Minister of Finance and my reply, and we would have been in Supply an hour ago. But the hon. member for East Kent (Mr. Gordon) stood up in his place; and in order to show the people of his constituency that he was not entirely in the hands of the government on this question, he raised the issue of amending the rules of debate without at the same time indicating, by a motion, in what respect he would have them amended. Had it not been for his interference in the discussion and for his bringing up a question so open to discussion, we would have been in Supply at twenty-five minutes to twelve. The hon. gentleman in fact blocked the Supply and prevented the Speaker leaving the chair, and he did this by raising the question of interfering with the rights of the minority, although his leader, the Minister of Finance, has declared that the minority have no rights.

Mr. GORDON.(Liberal): The hon. gentleman finds fault with me for taking up half an hour of the time of the House, but how many hours has he taken up this session?

Mr. LANCASTER.(Conservative (1867-1942)): I do not pretend to know, but I do say that the hon. gentleman who has just spoken is the first member of this House who has said that I wasted time by speaking here. He may have plucked up courage enough to say that here, but I venture to say he will take it back if he should meet me at lunch time. He has said to me in conversation, not once only but half a dozen times, that if all the members of the opposition talked as little and as sensibly as I do there would be no waste of time. Now, I do not care a button which of the different opinions the hon. gentleman expressed is his real opinion. All I say is that he ought to have a conservative mind and say the same thing whether he is in the House or out of it. He ought not to be so good a supporter of the Laurier government as to say one thing at one time

and a different thing at another time. I am not influenced one way or the other by the hon. gentleman's opinion, I do not speak in this House with a view to either winning or opposing such opinion concerning myself. I think that like other hon. members on this side I speak only when it seems to me in the interest of my constituents and the country that I should speak. But, when we are in Supply and a cabinet minister refuses information, refuses even to produce original documents, would the hon. member say that we should allow that Supply to go through without getting the information to which the country is entitled ? The hon. gentleman's argument is that the rights of the opposition should be curtailed according to the wish of the Finance Minister or any other member of the government who may have certain business he wishes to put through. What would become of responsible government if that view of the case should prevail ? The government undertakes to do something knowing that the people are against them, and knowing that the feeling against them will be the more increased the more the matter is discussed. The hon. gentleman would say: gag the opposition. If this could be done, there would be no object in people electing members to check and criticise the government, for the opposition would be deprived of the opportunity to perform that function. What would be the result ? There would be a petition to the King to reconsider the constitution of the country. If the hon. gentleman knows anything about public rights he must know that.

Mr. JOHNSTON.(Liberal): Give it to him.

Mr. LANCASTER.(Conservative (1867-1942)): Give what to whom? If I could give the hon. gentleman from Gape Breton (Mr. Johnston) some knowledge of the duty he owes to his constituents- who, I understand, are not very anxious to send him back after the approaching elections-it would be a good thing. But what the hon. gentleman says does not affect me, for he no more than the hon. member for East Kent (Mr. Gordon) gives me sincere advice. The hon. gentleman is willing that the country should be dealt with by the government as the government pleases. But we are not in that position. The people have the right to know what is to be done with the taxes they pay to this government, and it is the duty of the opposition to see that that information is supplied.

It would suit the hon. member for Cape Breton (Mr. Johnston) very well at present to have the government all-powerful. But after the next election, he will come to the conclusion that the opposition should have some rights.

Mr. JOHNSTON.(Liberal): It is just a quarter to one. Does the hon. member (Mr. Lancaster) think he can talk it out ?

Mr. LANCASTER.(Conservative (1867-1942)): I will try, if it will accommodate the hon. gentleman.

Mr. JOHNSTON.(Liberal): Only a quarter of an hour more.

Mr. LANCASTER.(Conservative (1867-1942)): I am willing to sit down now if I have convinced the House of the correctness of the position of the hon. member for East Northumberland (Mr. Owen) in raising this important question. And the hon. members who are interrupting me are doing no good to the country as a whole by taking the position that the Minister of Customs, or any other minister, is justified in leaving the House, especially at a time when business is so pressing that morning sittings have been ordered, to take part in the provincial election and to complain to the public about the business here not being done. I wonder that some good intelligent Reformer, did not ask the Minister of Customs why he was not down here doing what he could, at any rate, to have the business put through. In fact, that may have happened, but the 'Globe' has not seen fit to repeat it. And the Minister of Customs has not represented the matter fairly before the country, in complaining that the money of which he spoke was voted.

Mr. JOHNSTON.(Liberal): No, no.

Mr. LANCASTER.(Conservative (1867-1942)): That is what he said. What is the use of the hon. gentleman (Mr. Johnston) denying it ? The money was voted in Committee of Supply. ' It could not be available without a Supply Bill, but the Minister of Customs did not propose a Supply Bill. So he is misleading the people when he says he cannot get his 1,800 men paid. In view of the statements made by the member for East Kent (Mr. Gordon) and the Minister of Finance (Mr. Fielding) concerning the rights of the minority, I thought it well to discuss this matter, but I understand that some hon. gentlemen desire to speak, so I will give way.