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## **Semantic Networks Analysis of Political Party Platforms: Coalition Prediction Based on Semantic Distances in Scottish Elections 1999–2011<sup>1</sup>**

People often use spatial references while describing or discussing political terms; “this party leans to the right on fiscal issues, and when it comes to social issues though, it leans more towards the center”. Similar spatial logic applies to illustrating political positions, the right has come to represent more conservative views, while the left is thought to mirror more liberal positions. The same spatial metaphor applies to the relationships among political actors and their voters. Often parties are described as closer or further away from each other on some issue, representing their positions on a left to right spectrum. Budge describes that tradition of spatial rhetoric in *Estimating the Policy Positions of Political Actors* (2001). Also, he discusses the importance of being able to establish the position of political actors in that space to analyze their relationships.

Communication scholars, however, will more likely be interested in how these positions are expressed. McNair (2003) defines political communication as all “Verbal and written statements as well as visual means of signification... that might be said to constitute a political image or identity”. In agreement with his definition, communication researchers analyzing ideological expressions are interested in which communication tools, channels and devices mirror political parties’ positions and allow scientists to place a particular political actor in a common ideological space. One of the indicators of parties’ political positions is their party platform, program, or manifesto. This document is published every election and in most multi-party democracies is considered a reference point for estimating parties’ current ideological stands, future plans, and relation to political competitors (Pogorelis, Maddens, Swenden & Fabre, 2005). Party manifestos have been used to estimate parties’ ideological positions (Laver & Garry, 2000). The method most often used in manifesto’s analysis is content analysis (Volkens, 2001, Laver & Budge, 1992;

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<sup>1</sup> This article was presented at the International Communication Association Conference in London on

Budge, 2001), and occasionally computer-assisted text analysis (Laver, Benoit & Garry, 2003; Atteveldt, Kleinnijenhuis & Ruigrok, 2008; Bäck, 2003).

This paper examines party manifestos to predict coalition formation. A manifesto, as a tool of political communication, represents a party's ideology, and therefore a semantic analysis of words expressed in each manifesto reflects that stand. Traditionally, visualizing parties as "close" or "far apart" is rooted in either interpretations of their ideological placement on the right-left spectrum, or the history of their relations. Semantic analysis of party manifestos represents a new way of examining parties' relations. Parties that are closer together have the potential to share common goals. Coalitions can be seen as the fulfillment of that potential. Therefore, similar rhetoric and strong ties in discourse about important issues using a similar set of words can be an indicator of coalition potential. If parties are close to each other in ideological terms, they are likely to form coalitions. That fact should be seen in the semantic relationship of their manifestos. The distance among political parties based on word usage in their manifestos, provides another facet that may be added to the traditional spatial view of political relationships.

## Semantic Networks

Semantic network analysis is a method for examining text that infers meaning based on the use of symbols and themes in text by analyzing the words of which it is composed, their frequencies, clusters of words or symbols that appear in the text and graphic representation of central themes. Semantic networks can be used to describe the structure of connections between people, political parties, organizations, countries and any other actor in terms of communication content (Danowski, 1982). In this research, semantic networks are used to analyze structural relations among political parties based upon their shared meanings. Shared meaning is operationalized as shared word use in party manifestos.

Semantic networks analysis grew out of social and communication network analysis (Carley, 1993; Danowski 1982; Doerfel, 1998; Woelfel, 1997) and is different than most commonly used set of methods of text analysis. Semantic network analysis does not require prepared categories or manual coding that can often be problematic when analyzing language. Also, it emphasizes the words used in text, and the context in which they are used tracing trends beyond the meaning of the individual words and eliminates the need to analyze meaning and categories before beginning the analysis. Instead, semantic network analysis allows the structural examination of text, including the relationships between words and their frequency of occurrence. From this analysis, themes central to the text may be inferred. Semantic networks can also be visualized, by mapping the concepts central to the text and comparing them either within one corpus or between different documents.

Semantic networks analysis has been used to analyze variety of texts in different contexts. For example, it has been used to assess cultural differences in translations of Universal Declaration of Human Rights (Kwon, Barnett & Chen, 2009), to analyze

titles of papers presented to the International Communication Association (Doerfel & Barnett 1999), and to examine cultural differences in organizational communication (Jang & Barnett, 1994). It has also been used in the political context. Doerfel and Marsh (2003), Doerfel and Connaughton (2009) analyzed U.S. presidential debates. Other topics include political blogs (Wallsten, 2007; Meraz, 2008), the analysis of newspaper articles with focus on language (Atteveldt, et al., 2008), causality in political networks (Fowler et al., 2011) and political speeches (Klebanov, Diermeier & Beigman, 2008). Some researchers have focused on linguistic or semantic analysis of party manifestos (Gabel & Huber, 2000; Laver, et al., 2003). However, no one has used semantic analysis of party manifestos as a method to predict coalition formation.

It is beyond the scope of this paper to fully analyze methods of predicting coalitions. However, none of the existing approaches considers multi-level party system characteristics. Further, none of the mechanisms has been shown to work in predicting existing coalitions. For broader review addressing types of coalitions, methods of predicting them and problems related to these methods, see Laver and Shofield (1998) and Bäck (2003).

There are two unique contribution of this research: one, it describes the Scottish political system and its multiparty character, and two, it analyzes party manifestos as potential indicators of coalition formation. Manifestos, platforms, or as they are called in some countries, are documents that political parties publish for each election. They serve several important purposes. First, even though their messages get abbreviated and simplified during the campaign, party manifestos are the basis of communication with voters during elections. Nothing that reaches voters in form of campaign slogans, candidates' speeches, or even posters can contradict what is stated in the manifesto. Secondly, being published for every election, its manifesto is a way for a party to adjust its positions on the political spectrum, update its profile and address issues central to specific elections. Thus analyzing manifestos over time provides a valuable opportunity to track changes in party's rhetoric, as well as, to compare issues central to particular elections. Finally, manifestos are a way for the party to place itself on the political stage in relation to its competitors and the electorate, make promises and establish itself as a potential ruling party or an opposition force, and frame its program (Laver & Shofield, 1998).

As a communication tool, manifestos are an essential device with which political parties achieve all of the above mention goals. As such, party manifestos may be considered a viable factor to consider when looking for potential predictors of a party's choice in the selection of coalition partners. Examining semantic similarities and differences among a set of manifestos for any particular campaign, and comparing them across the parties that took part in that year's election should clarify which parties would be more or less likely to form a coalition. Predictions are based on the assumption, that ideological similarities and differences are mirrored in parties' main documents, that year's election manifestos. Parties whose statements, values and election promises differ drastically should be semantically distant, while

parties closer together, could be perceived as potential coalition partners (Laver, et al, 2003). Further, if manifestos are similar in the issues they are addressing, and in the contexts in which they are discussed, it should be visible in the manifestos' semantic structure. If the manifestos' semantic structures are similar that would be indicative not only of similar meanings and use of symbols, but also similar relationships between those symbols. This suggests that parties with similar ideological outlooks, which consider the same issues as important, would put forth manifestos that mirror ideological and semantic commonalities. Parties that reside on the same side of political spectrum share meaning assigned to crucial issues and the analysis of their manifestos should be similar even without prior knowledge of the country's political landscape.

Finally, the party that obtains the largest number of votes should be reflected in the centrality of the issues discussed in its manifesto (Doerfel, & Connaughton, 2009).

Thus, two research questions and two hypotheses may be posed:

RQ1: Are semantic distances indicative of parties' political and ideological similarities such that parties that are close to each other ideologically will be close to each other in terms of semantic distances?

RQ2: Is it possible to predict political coalitions based on the semantic analysis of party platforms?

H1: Centrality within the semantic network is related to the proportion of votes received, such that the more central a party, the greater proportion of votes.

H2: In situations where no one party wins a majority, the greater the similarity between the semantic structures of two political party platforms, the greater the likelihood that they would form a coalition.

## **The Scottish Political System**

To answer the research questions, the manifestos of Scottish political parties were analyzed. Political competition in Scotland can be seen as balancing act between the United Kingdom's party politics and the Scottish context. Some of the parties in Scottish elections are independent, and specifically Scottish, while others are branches of the United Kingdom's national parties, with different degrees of independence and dissimilar relations to the central parties. Another aspect that makes the Scottish context unique is that since the establishment of the Scottish parliament there have only been four elections, with the same parties participating. The Scottish Parliament was first elected on May 6, 1999, and began to function in its full legislative capacity that June. Three more election have taken place since in 2003, 2007, and most recently in 2011, which allows researchers to track changes in party relations over a manageable time period with the same actors. The Scottish parliament consists of 129 representatives called MSP's, Member of Scottish Parliament.

## **Political Parties in Scotland**

There are five major political parties in Scotland. Their history, their role in past elections, party's structure, characteristics of its political profile and its electorate will be described, and past coalitions discussed.

### **Scottish Labour Party (SLP)**

The Scottish Labour Party is a part of British Labour Party and is represented in Scotland by regional party structures such as Scottish Conference, Scottish Executive Committee, Scottish Head Office and Scottish Policy Forum. The SLP has its own leaders, party structures and separate party platform issued for Scottish elections. It is a separate document from the Labour party platform issued for elections to Westminster. It is seen as more towards the left, than the left-to-center British Labour. The Scottish Labour Party is becoming a separate political body specifically representing Scottish interests. Since the first election in 1999 the SLP leader is elected without input from the central party (Laffin, Shaw & Taylor, 2004).

The Scottish Labour Party won both the 1999 and 2003 elections. In 2007 and 2011, it came in second behind the Scottish National Party (SNP). In 2011, however, the SNP's victory was much greater. In 1999 and 2003, SLP formed a coalition government with the Scottish Liberal Democrats, establishing majority government (Burnside, Herbert & Curtis, 2003). Of all the parties, the Liberal Democrats are the closest in profile to the Scottish Labour Party, however, their electorate is sufficiently different to form a strong base bridging voter types. While Scottish Labour enjoys its strongest support among middle class urban voters, the Liberal Democrats have strong rural support.

### **Scottish Liberal Democrats**

Similar to the Scottish Labour and Conservatives, the Scottish Liberal Democrats has representation both at a regional and national level. Unlike the Scottish Labour Party, the autonomy of the Scottish organization is more broadly and better defined. The Scottish Liberal Democrats have a decentralized structure. They enjoy strong rural support and its main source of electoral strength lies in a few candidates who are well known political activists. The Scottish Liberal Democrats came in fourth in all the elections. In 1999 and 2003, they formed coalition governments with Scottish Labour. In comparison to the SLP, the Scottish Liberal Democrats are more centrist, although not without a strong left preference.

### **Scottish National Party (SNP)**

The Scottish National Party was founded in Scotland, and throughout its existence has represented only Scottish interests, with no central structures overlooking its policies, or direct tie to any other party present in the U.K. SNP's electorate is similar to the Labour Party's, comprising mostly of the urban lower middle and middle class. SNP took second place in both 1999 and 2003, and won the 2007 elections (Herbert et al, 2007). That victory was significant because for the first time, the party in power was different that the one holding a majority in Westminster.

The Scottish National Party was unable to form a coalition, but formed a minority government supported by the Scottish Green Party. Finally, in the 2011 election it won a majority.

### **Scottish Green Party**

Due to its small size and relatively weak parliament representation the Scottish Green Party has placed as fifth in all three Scottish elections. In 2007, it supported Scottish National Party's minority government and drew attention to issues beyond their environmental positions. It supported Scotland's striving towards independence.

### **Scottish Conservative and Unionist Party**

The Scottish Conservative and Unionist Party is a regional branch of Conservative and Unionist Party in Great Britain. It has had its present name since 1965. Before that the Scottish regional conservative party was called the Scottish Unionist Party. Similar to the Scottish Labour Party and the Scottish Liberal Democrats, Scottish Conservatives prepare separate platforms for Scottish elections differentiating on issues of regional importance. In Scotland, the Conservative Party has never enjoyed the level of support of Labour. In the 2010 election when the Conservatives won national elections with 55.7% of votes, only 16.8% came from Scottish districts and added up to only one of 308 Conservatives seats in parliament (Kimber, 2011).

## **Method**

This study analyzed the texts of the party manifestos of the five Scottish political parties that took part in all of the elections, 1999 to 2011. There were two reasons for choosing these five parties: one, they all took part in all Scottish elections, and two, they all received enough votes to secure representation in parliament.

The study used the CATPAC software to analyze the party manifestos. CATPAC is a computer program designed to analyze text (Woelfel & Stoyanoff, 2007). CATPAC scans the text, determines which words are used most frequently and the co-occurrences among these words. CATPAC also reports the semantic structure using Ward's cluster analysis to determine clusters of words. From these clusters, meaning can be inferred about themes/clusters in the text (Doerfel & Connaughton 2009).

The most frequently used words were compared on several levels. In order to compare word frequencies ten matrices were created. Those would be used to visualize the data. Also, the matrices allowed the comparison of word frequencies between parties for each election. After obtaining the word frequencies and clusters and making the matrices of most common used words by party, next step was to analyze visual representation of data. UCINET/NETDRAW was used for that purpose (Borgatti, Everett & Freeman, 1999). UCINET/NETDRAW is a program for visualizing social networks.

Finally, semantic distances between parties were calculated and visualized. The closer the nodes (parties) were to each other, the more words they shared and the greater the overlap in the relations among the word, hence the more similar the manifestos in meaning. The assumption was that parties that entered a coalition would share the most words in their manifestos. The distances between parties were extracted from UCINET. Also, multidimensional scaling revealed the location of each party in two-dimensional space, such that the party that was most central (used most words associated with issues central to that year's election) was closest to the origin of the space (Woelfel & Fink, 1980). Centrality is defined as the average distance of one party to all others, with the party sharing the most words is the most central (Jang & Barnett, 1994).

Two other properties were analyzed based on the semantic network analysis. First, tie strengths were compared to explore words central to each election and how often each party used those words (how strong is the tie between each party and the central words). Second, eigenvector centrality was calculated in order to determine if centrality in the network corresponds with the proportion of votes that party obtained for each election. The analysis was repeated for each election year, resulting in four visual representations –1999, 2003, 2007 and 2011.

## Results

### The 1999 Election

The Labour Party won the 1999 election with 43.4% of the votes (56 MSP's) and formed a coalition government with the Liberal Democrats. The Scottish National Party (SNP) came in second with 35 MSPs (Scottish Information Center, 1999). The Liberal Democrats and Conservatives came third and fourth with only one seat difference, 18 to 17. The Green Party was last with only one seat. After calculating distances using the parties' coordinates in the two-dimensional space SNP is closer to Labour (.087) than the Liberal Democrats (.280). When presenting the distances, no units are given because the calculations of distance are an estimation resulting from converting a multidimensional model into two-dimensional-space and are used as symbols to present the distances among the nodes. As a result, there is no specific metric unit. They simply indicate how many words the parties' manifestos share. Parties that are closer to each other in terms of semantic distances share more words and meanings than parties that are further apart. The parties' distances from each other in MDS are presented in Table 2.

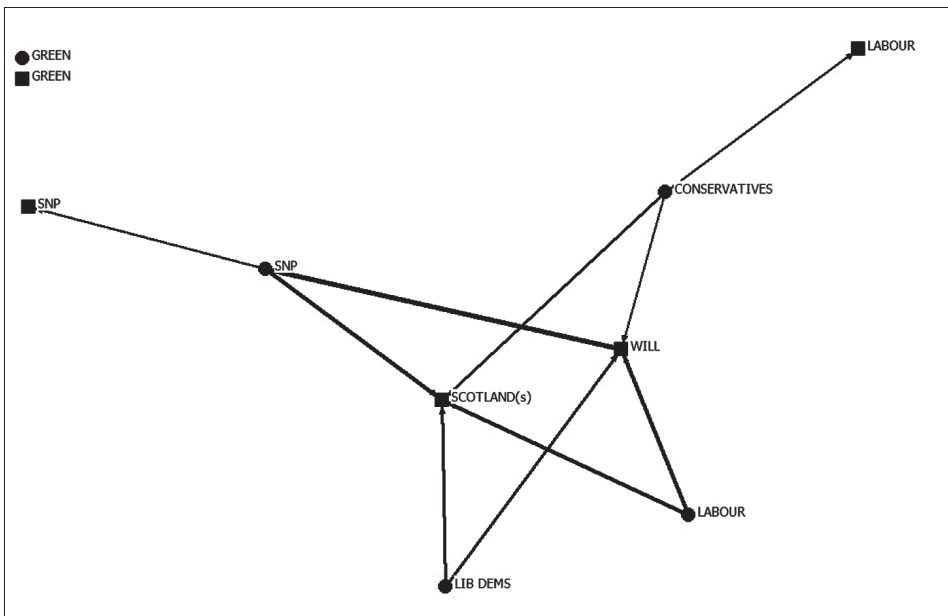
Stress level, which is a measure of goodness of fit, was .078, below the accepted .2 value (Borgatti, Everett & Freeman, 1999). Stress estimates the difference between original distances and those in two-dimensional space, as presented in Figure 1. Bonacich normalized eigenvalue centrality measure (Bonacich, 1972), indicates that SNP is the most central party in the 1999 election. SNP presented the most issues central in the semantic space, relative to the other parties. Second most central is Labour, followed by Liberal Democrats. This measure of centrality

accounts for 94.2% of variance in 1999 election data. The eigenvector centrality values for all parties for each election can be found in Table 1.

**Table 1.** Eigenvector centrality measures for all parties for each election year

	Green	Conservatives	SNP	Liberal Dems	Labour	
1999		16.00	44.59	89.05	62.8	76.7
2003		37.04	43.09	74.99	59.14	87.46
2007		33.39	26.84	56.37	81.95	90.95
2011		22.09	26.46	103.12	57.24	70.02

**Figure 1.** 1999 election two-mode words by party network, tie strength 70



**Table 2.** Semantic Distances between Parties All Election Years

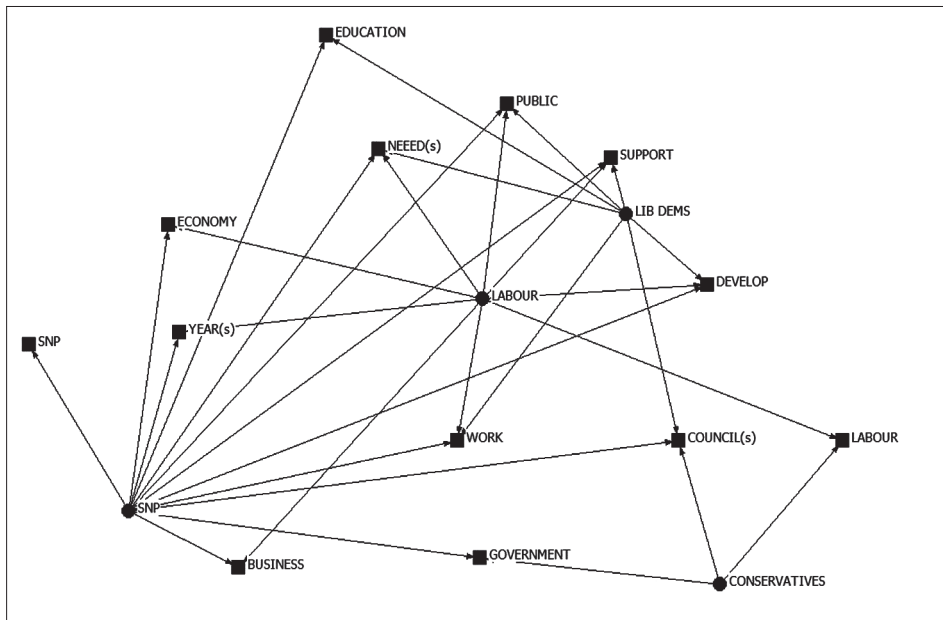
1999	Conservatives	Labour	SNP	LibDems	Green
Conservatives	.452	.463	.699		.846
Labour	.087		.280	.853	
SNP		.237		.770	
LibDems			.799		
2003	Conservatives	Labour	SNP	LibDems	Green
Conservatives	.585	.551	.964		.912
Labour	.170		.390	.650	
SNP		.431		.814	
LibDems			.828		



2007	Conservatives	Labour	SNP	LibDems	Green
Conservatives	.612	.775	.658	.839	
Labour	.279	.055	.543		
SNP	.293		.802		
LibDems			.512		
2011	Conservatives	Labour	SNP	LibDems	Green
Conservatives	.745	.581	.626	.721	
Labour	.167	.362	.604		
SNP	.26		.6		
LibDems			.857		

A two-mode network illustrating words and parties on the same graph (Figure 2) is interesting. First, all of the parties’ strongest ties are with the word Scotland. However, Labour and SNP, the two parties that received the majority of votes had the strongest ties with the words Scotland. Second, the Conservatives, which received only half of the votes of SNP and came in third, had most often mentioned competition. The Conservatives was the only party that linked with the word Labour. This might suggest that negative campaigning doesn’t bring positive results in Scotland’s politics.

Figure 2. 1999 election two-mode network, tie strength 25, with words shared by four major party eliminated



Based on the analysis of the semantic network for the 1999 election, the coalition that formed the government could not be predicted based solely on semantic network. Therefore, the second hypothesis was not supported. The parties that

were closest to each other in terms of shared words were the SNP and Labour, while parties, which entered the coalition this election, were Labour and the Liberal Democrats. The first hypothesis was not supported. The SNP was closest to the center of the network. This suggests that its strong position as the only regional party and thus, the one considered closest to issues crucial in Scottish elections. SNP's central position indicates that proportion of votes obtained does not indicate centrality. However, the Labour Party, which in terms of centrality was second, obtained the largest number of votes, which means that issues mentioned in their manifesto were second in terms of centrality and interconnectedness in that election.

Also, after setting tie strength at 25 and eliminating the words shared by all four major parties, and eliminating the words only one party used and doesn't share, SNP shares the most words with at least one other party. SNP shares 11 words with at least one other party, Labour has 9, Liberal Democrats 7, and the Conservatives 3. The rationale for eliminating the words shared by all four major parties is that these words do not differentiate the parties. They include such words as Scotland, will, and parliament and represent boilerplate in the manifestos. The Green party was not considered in this analysis because requiring a tie strength at 25 and eliminating all the words that are shared by all five parties, Green party showed no connections with any other party, and became an isolate connected only to the word Green. Figure 2 shows the revised semantic network without the common words.

### 2003 Election

2003 election results maintained the status quo. The Labour Party once more obtained the largest number of votes, and received 50 (38.8%) MSP seats. SNP came in second, even though it lost voter support. In 1999, SNP obtained 27% of the seats, and in 2003 dropped to 20% (27 MSP's). The Conservatives and Liberal Democrats maintained the same percentages of seats, 14.0% for the Conservatives (18 MSP's), and 13.2% for the Liberal Democrats (17 MSP's). Again, Labour formed a coalition government with the Liberal Democrats.

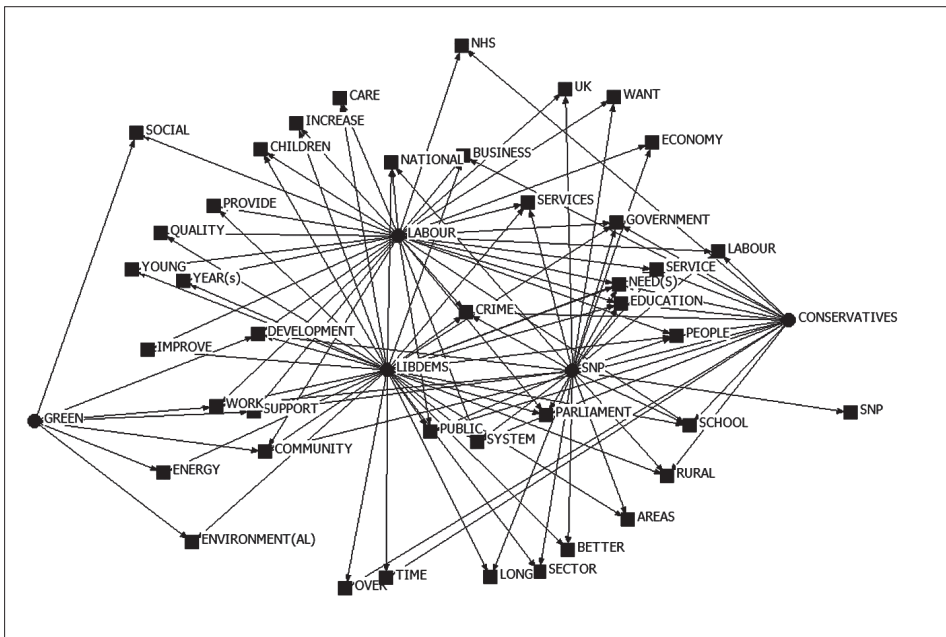
The graphic representation of distances between parties again places Labour closer to SNP than the Liberal Democrats, but this time Labour and SNP are not as close as in 1999. The Conservatives again seem removed from the Liberal Democrats-Labour- SNP trio. This time, however, the Green Party's distance to those three is equal to the Conservatives. The calculated distances confirm that SNP is closer to Labour than the Liberal Democrats. SNP is not that much further from Liberal Democrats than Labour. The Conservatives are closest to the SNP, while the Green Party is closest to Labour, which shows that the difference between the Conservatives and Green in terms of peripheral position is small. Again, the Liberal Democrats, SNP and Labour share the most words and issues, despite similarities in number of votes the Conservatives seem to be left out of this triangle.

The stress value for the MDS for the 2003 election was .124. The Labour Party is most central, which mirrors the fact that SNP did not address issues most central to that year election and therefore, their voter support dropped. The SNP is second

most central party, followed by the Liberal Democrats and the Conservatives. The Conservatives peripheral position confirms that they have less in common with their competitors in terms of language used in their manifestos than the three major parties: Labour, SNP and Liberal Democrats. The Green Party was much more central in 2003 than in 1999. This is indicated by their increase in obtained MSP's (1 in 1999 to 7 in 2003). When looking at the 2003 two-mode words by party network, it is clear that the Green Party did not share many words with the other parties, and even shared words only with one other party at a time. This placement, along with its measure of centrality, low vote count and small number of MSPs establishes its position as a peripheral party, ideologically separate from the others.

The Liberal Democrats have the most connections with other parties. After eliminating words common to all five parties at 25 words tie strength, and eliminating words the parties do not share, (Figure 3) the Liberal Democrats share the most words (33). Labour shares 30, and SNP 25 words. The Conservatives have 17 connections and the Green Party 7. The Liberal Democrats share many words with other parties, but fall third in centrality, because the analysis methods do not account for length of the manifesto. The Liberal Democrats have longer manifestos than their competitors. Thus, even though they will have more words in common with their competitors, the weight of those words in terms of interconnectivity and centrality of issues is weaker than the manifestos of Labour and SNP.

**Figure 3.** 2003 elections two-mode words by party network, tie strength 25, words shared by all five parties eliminated



Consistent with the 1999 election the three strongest parties that were considered the competitors and potential coalition partners were once again in the center of the network, indicating that the answer to the first research question is affirmative. Semantic distances mirror parties' commonalities, even if predicting coalitions based solely on shared meanings is not possible. The second research question and the second hypothesis were not supported. In the 2003 elections, the coalition could not be predicted based on semantic similarities of party manifestos. However, contradictory to 1999, centrality in 2003 was indicative of the number of obtained votes, Labour was the most central, supporting the first hypothesis. Semantic structure similarities do not indicate coalition partners, however they can be indicative of central and peripheral positions in power struggles, as well as importance of issues discussed in the manifesto.

### **2007 Election**

The 2007 election brought big changes in Scottish politics. SNP won the election and formed a minority government with Green Party support. SNP won with a narrow margin (47 seats to Labour's 46) and a small percentage difference, 36.4% to Labour's 35.7% of available seats. However, the number of seats SNP won nearly doubled (27 to 47), while the number of seats maintained by Labour dropped by 4 (50 to 46). The Conservatives came in third with 13.2% seats (17 MSP's), distancing Liberal Democrats by only one seat (16 MSP's, 12.4% of seats). The Green Party dropped significantly, maintaining only 1.6% available seats, from 5.4% in 2003.

The graphic representation of semantic distances from 2007 shows some interesting changes. The SNP shared fewer words with Labour and the Liberal Democrats, who in turn appear much closer to each other than previously. Both the Conservative and Green parties maintained their peripheral position with the Greens a little closer to the Liberal Democrats and Labour with the Conservatives.

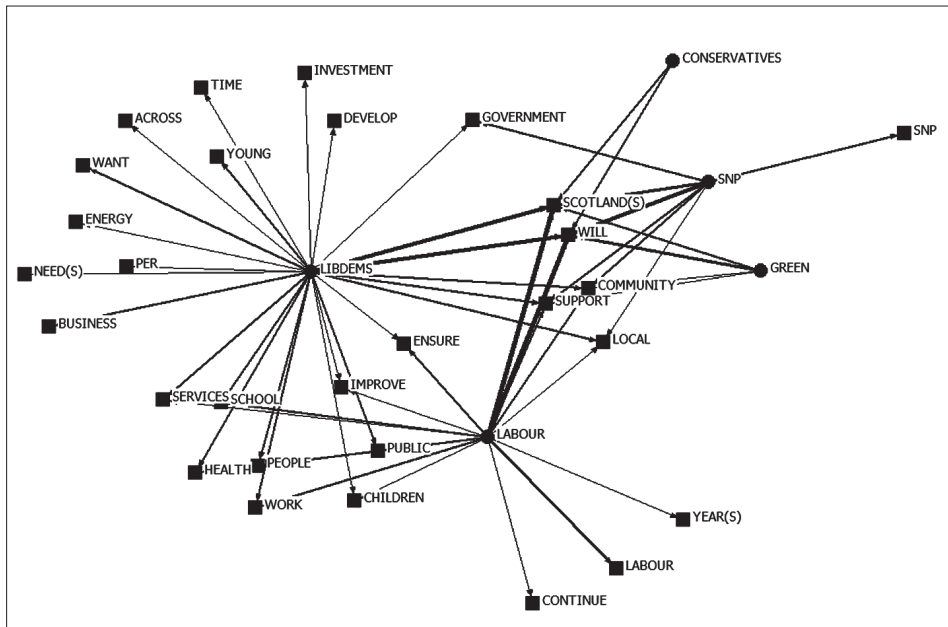
Calculating the distances confirms the visual observation. Of all the parties, Labour and the Liberal Democrats are the closest to each other. The SNP is almost equally distant from both. The Conservatives' closest competitor is Labour, and the Green Party is closest to the Liberal Democrats. Calculated distances among all the parties can be found in Table 2. The stress value for the MDS was .096. The amount of variance explained by the centrality measure was 91.6%. The measures of centrality provide the most unexpected results in 2007 election analysis. The SNP, the party that obtained the largest margin of votes was third most central in the network. The most central party was Labour, Liberal Democrats were second, and SNP third. This might indicate a change in voters' interest. The issues that were most mentioned in the manifestos, might not have been issues that the Scottish people most cared about that year. Therefore, the party that obtained the most votes was the party that discussed issues emerging in the political discourse. Therefore in 2007, centrality was not indicative of voters' support.

Predicting a coalition based on semantic distances was not possible. SNP did not form a coalition that year, initially entering talks with Liberal Democrats, settling for

a minority government with Green Party support. The Green Party that supported the SNP, which for the first and only time was more central than the Conservatives.

The two-mode network from 2007 suggests one of the limitations of the study. SNP, the party that obtained the greatest number of votes, did not mention many issues salient to the other parties. At tie strength set at 80, to examine only the strongest most often mentioned words, the Liberal Democrats were the most connected, sharing some words with both Labour and SNP (Figure 4). However, they uniquely mentioned a few individual issues. The same situation is found looking at Labour. In comparison, SNP is connected only to few of the shared words and have no “independent” words. Yet SNP won the election and captured most pressing issues on voters mind. That might suggest that the length of the manifestos distort the results. The Liberal Democrats have manifestos much longer in page length than the SNP. 2011 Election. In 2011, the Scottish National Party won the election by a large enough margin to form a majority government without a coalition partner. The SNP won the election securing 53.5% of all seats 69 MSP’s. Labour came in second, but unlike the previous election when the difference between winners and the runner up were few seats, it received about half the number that SNP won, only 37 (28.7%) seats, 32 less than SNP. Third were the Conservatives with 15 (11.6%). The Scottish Liberal Democrats found themselves in a weakened position securing only 5 (3.9%) seats, a two-thirds drop. The Green Party received only 1.6% of the votes and secured 2 seats, unchanged from the previous election.

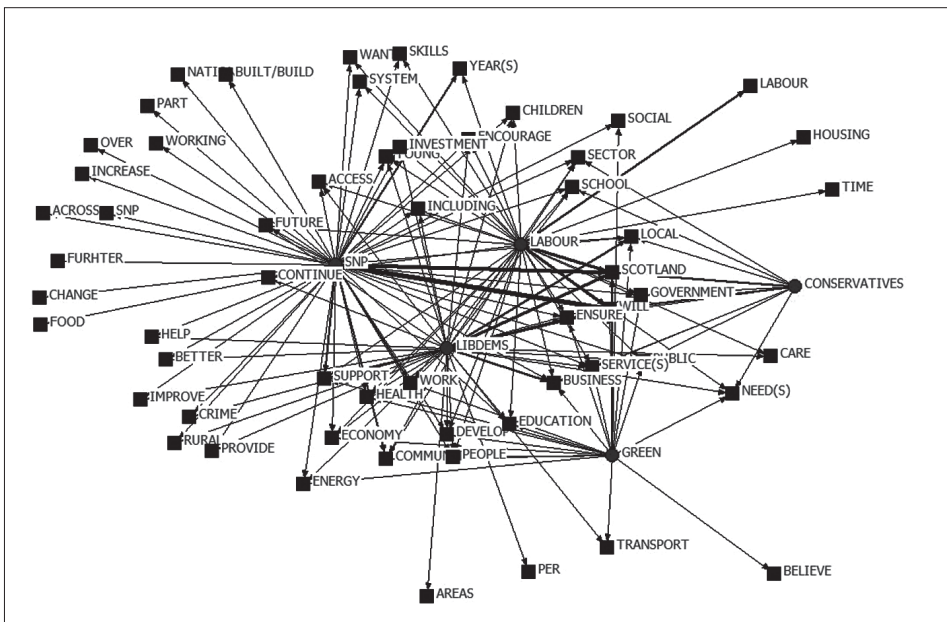
Figure 4. 2007 election two-mode words by party network, tie strength 80



In terms of semantic distances, Labour shared the most words with the winning SNP, the Liberal Democrats were more distant than previously and even though they are closer to SNP than to Labour, they are removed and are no longer close to the Liberal Democrat-Labour-SNP triad, as in 1999 and 2003. The coalition could not be predicted based on distances, because the SNP secured majority. The stress value for the two-dimensional multidimensional scaling was .122. Calculated distances show that even though Labour and SNP are sharing most words, their overlap wasn't as great as Labour and the Liberal Democrats in the previous election. The parties were particularly close to each other in 2011, and the SNP distanced competition by a large margin.

In 2011, the order of centrality corresponded with proportion of obtained votes with the SNP in the most central position, Labour second, the Liberal Democrats third, the Conservatives fourth and the Green Party last. The variance explained by this measure was 93.4%. Therefore, the 2011 election year data supports first hypothesis. The second research question and second hypothesis are not applicable to 2011 data, since SNP formed a majority government and did not form a coalition.

Figure 5. 2011 election two-mode words by party network, with tie strength set at 25



Looking at the two-mode words by party network representing the 2011 election, it is clear that the SNP has many words in its manifesto that were not shared by the other parties (Figure 5). Labour and the Liberal Democrats seem interconnected with other parties, while maintaining some individual issues. The Conservatives lacked unique words, and shared most words in the network with at least one other party. The SNP was very centrality despite sharing fewer words than Labour and

Liberal Democrats, indicates its position in establishing issues central to all parties, as well as the salience of issues they share. At the same time, while sharing interest in crucial issues with other parties, SNP effectively pursued issues specific to their party's national character, therefore making words they do not share salient for voters. They strengthen their position enough to make their issues most central, even though they were not mentioned by the other parties.

## Discussion

The election results from 1999 through 2011 show that the SNP and Scottish Labour Parties are the central actors on the political scene. One of the differences between the two parties is that the SNP is the only actor without ties to United Kingdom politics. Therefore, all political decisions made by the SNP and all consequences of their political actions apply only to the Scottish electorate. Labour is in a different situation. While trying to win over the Scottish electorate, and to portray the party as representing the interests of the Scottish people, Labour has to consider that their political discourse will be interpreted within the larger context of the U. K. In terms of the electorate and overall political outlook the party closest to Labour is the SNP. One important difference between these parties is SNP's declared support for Scottish independence. This difference could be seen as the issue on which the parties differ, and if other issues make them close allies, a coalition could be possible. However, in the Scottish situation because SNP seeks independence from the very system of which Labour is a part any coalition potential, regardless of other ideological similarities is eliminated. Therefore, the first research question can be considered supported, since regardless of coalition potential ideological similarities indeed suggest Labour and SNP as close allies. In every election with the exception of 2011, Labour and SNP were closest in terms of semantic distances, and they were the most important contenders for Scottish votes representing similar agendas. The only time when Labour's closest partner in terms of semantic distances was not the SNP, but the Liberal Democrats, can also be seen as support for the first research question. By 2011, Labour and the Liberal Democrats had been effectively ruling Scotland for eight years with the same coalition government. Thus, it could be expected that this closeness and cooperation will be mirrored in mutual influence and change in the language of their party manifestos.

The answer to the second research question can be interpreted in more than one way. Taking into consideration just the semantic distances between parties, the assumption that the parties with the smallest semantic distances would form a coalition was not met. Therefore the answer to the question would be negative – it is not possible to predict coalition formation based on only the semantic distances between parties of their manifestos. However, considering the characteristics of the Scottish political system, and the fact that the parties closest to each other had little chance to enter a coalition, the answer becomes more complicated. Consider that the parties with the most common manifestos would not enter a coalition, it is

possible that the winner of the election would look towards other central actors, and choose a coalition partner from among them. This happened with Labour, twice picking the Liberal Democrats as their coalition partner. The vote count indicates the Liberal Democrats or the Conservatives as equally capable since difference in vote total was minimal. However, the Liberal Democrats were both more central, and closer in terms of semantic distance, therefore making a better coalition match. Even though there is not a direct relation between the semantic distances and coalition formation, the nature of this relationship seems to be curvilinear. If parties are too close they will not enter a coalition because they represent competition. If they are too far, they will not consider each other as potential partners because they are ideologically too dissimilar. If the potential rival is too ideologically close that party might not be a desirable coalition partner because of the danger that after forming a government together, the electorate will start either confusing the parties, or changing their votes because they do not see the distinctive difference between the two. To avoid this danger, parties might be reluctant to seek coalition partners among parties that are too similar.

The first hypothesis was partially supported. In 2003, Labour was the most central with the largest percentage of votes. In 2011, SNP was in the same situation. In both years, the party that was most central was the election winner. That might suggest that after forming a government and dominating political scene for four years, parties tend to set the political agenda and dictate the most important issues (Nabi & Oliver, 2010; McCombs & Shaw, 1972). Therefore, for the next election the issues that the governing party considers central become central to the political discourse further strengthening the party's position. Agenda setting theory put forth by McCombs and Shaw (1972) claims that the media influences our perception of issue importance. Its main postulate salience transfer suggests that the media have the ability to transfer their agenda to public agenda creating an impression of importance.

If one coalition dominates the political scene like the Labour – Liberal Democrat coalition, the issues emphasized by those two parties will be covered by media a great deal, which will lead to issue salience being skewed towards issues favored by the governing parties. The result might be voters' perception of those issues are more central than issues favored by opposition, which might not have been receiving equal media attention. To fully examine potential relationship between party manifestos, news sources and voters' perception of issue importance more research is needed.

Finally, the second hypothesis was not supported. Parties that were most similar in terms of semantic structure did not enter a coalition in election years when no one party won the absolute majority. The results suggest support for a curvilinear relation of semantic distances and coalition potential.

Although the majority of the research questions and hypotheses were not supported, semantic network analysis represents a viable method for the analysis of political party manifestos. Issue centrality and the semantic distances among parties



indicate that the words used in party manifestos mirror the power structure of the political system. Even though coalitions could not be predicted based on semantic distances, certain patterns were revealed in terms of coalition potential. First, the existing power structure was reflected in semantic distances. The SNP, Labour and Liberal Democrats, continued to maintain the most central position with the Conservatives and the Greens as peripheral players. While, the Conservatives had obtained a similar number of votes as the Liberal Democrats, they would not be considered a coalition partner in the context of Scottish politics. Second, in the elections that Labour won, their closest competitor in terms of semantic distances was the SNP and not the Liberal Democrats, it was expected that Labour would choose a different coalition partner than SNP. Both Labour and the Liberal Democrats are national parties and are therefore obligated to balance their interests on both regional and national levels. Labour by associating itself with SNP, a strong nationalistic party promoting independence might hurt its image nationally. However, the fact that its manifesto shares most semantic commonalities with SNP – a regional level party, might shed some light on their strong position in Scottish politics. Labour's manifesto promotes many of the same issues as the regional party might mean that regionally, it is successfully tailoring their message to the Scottish electorate, instead of maintaining the same political profile they assert nationally. That might explain their electoral victory in 1999 and 2003.

Another phenomena explained by semantic analyses might be that Labour and the Liberal Democrats over time have moved closer towards each other in terms of semantic distances. In the 1999 election, the distance between Labour and the Liberal Democrats was .28. In 2007, it measured merely .055. Maintaining a coalition government over time, the two parties have merged their policies and gotten closer, which is mirrored in their manifestos.

Semantic analysis can also help explain the shift in centrality between the 2007 and 2011 elections. Until 2003, Labour and the Liberal Democrats were ruling coalition partners with Labour winning both the 1999 and 2003 election. However, in 2007, SNP came into power by bringing up new issues and changing the direction of political discourse. In 2007 although they won the election, SNP was less central, with Labour and the Liberal Democrats still dictating which issues were salient. However, the people of Scotland decided that the issues discussed by Labour and the Liberal Democrats were no longer the most important and turned to SNP. By 2011, that change can be seen in SNP's centrality, clearly maintaining its position of power and making its issues more central.

### **Limitations and Future Research**

One of the limitations of this study is not accounting for length of the manifestos. The parties with longer manifestos might become more central position because of the number of words in their manifestos. However, the Liberal Democrats, the party with the consistently longest manifestos had never achieved high levels

of centrality, suggesting that while influencing two-mode network comparisons, manifesto length can be accounted for by centrality, since the latter considers the interconnectedness of issues, as well as, the word count. In future research the proportion of words used in particular manifestos instead of word frequency may resolve this issue.

Another limitation is that the words shared by all the political parties have not been accounted for in the analysis. If all parties share certain words, then they don't change the relations among the parties, but add to the number of ties, and this influences the centrality measures. A valuable addition to future research would be to compare results with and without the common words.

Finally, the capability to generalize the results to multi-party democracies is limited by using only one country as an example. The Scottish political situation had most likely influenced coalition outcomes, and it would be useful for future analyses to compare Scottish findings with those of a country with only one level of government. Conclusion In spite of the fact that most of the hypotheses were unsupported, this research adds to the discussion about how to analyze political text. There are two points that one can take away. One, there are more factors in choosing a coalition partner than semantic similarities. Two, even though coalition formation could not be predicted from semantic analysis of party manifestos this approach to analyzing the political landscape provides an accurate picture of the division of power and centrality of issues for a given election. Analyzing party manifestos using semantic networks opens an unexplored branch of political communication that focuses on the expression of meanings during campaign. There is great potential in examining political text with focus on the tools of political communication, as well as looking specifically at party manifestos. It can reveal information about country's politics, making it possible to obtain information without previous knowledge of country's political context, and therefore without bias.

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## Semantic Networks Analysis of Political Party Platforms: Coalition Prediction Based on Semantic Distances in Scottish Elections 1999–2011

### Abstract

This paper conducts a semantic network analysis of Scottish political party manifestos from the 1999, 2003, 2007 and 2011 elections to predict coalition formation. A manifesto is a tool of political communication that represents a party's ideology and discusses issues considered crucial for each election. Semantic analysis of party manifestos represents an innovative method for examining the relations among political parties. Parties that are closer in the semantic network have a greater potential to form political coalitions. Semantic distances and two-mode semantic network analysis also proved to be a viable method for describing a country's political climate and power structure, without requiring prior knowledge of country's political makeup, and without pre-conceived notions. The results indicate that a semantic analysis of political party manifestos can be used to predict coalitions, but factors other than semantic similarity must be considered. Semantic network analysis provides an accurate picture of the distribution of power and centrality of issues for any given election.

**Key words:** political parties, coalitions, Scotland, Scottish political parties system