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It is sometimes said that the societal debate on a policy issue has become polarized. Most social scientists have an implicit understanding of this expression. But social science lacks formal and objective techniques to measure the evolution of political or societal debates on a policy issue. How does one know for sure whether a debate is polarizing or whether it evolves in the direction of consensus? To what degree has a debate polarized? What is the distance between the protagonists?

This article attempts to fill this gap in the methodological knowledge of the social sciences by presenting a method for the formal measurement of dynamics of policy conflict by analysing discourse. The method is based on a combination of content analysis and social network analysis. In this article, it will be exemplified by the analysis of the historical debate on abortion in the Belgian Chamber of Representatives (1972-1990).

Keywords: Policy controversy, polarisation, methodology, social network analysis, abortion

1. Introduction

In 1990 the Belgian Chamber of Representatives was one of the last parliamentary assemblies in Europe to approve a law on the liberalisation of abortion. Until that date abortion was prohibited in Belgium by the Napoleontic penal code of 1810 and its subsequent reforms. These laws sanctioned doctors or midwives performing an abortion, as well as the women who underwent it. The laws, which also sanctioned propaganda for contraceptives, were congruent with the ecclesiastical perspective on procreation and sexuality, which viewed motherhood as the ultimate fate of a women. According to these Christian ethics the fertilized ovum is a person in the making, on which the woman cannot decide at her own discretion (Witte, 1993).

Until well in the 1960's anticonception and abortion remaind societal taboos. Contraceptives were only legalized in 1973. Until that time illegal abortion was thriving in Belgium (Celis, 2001). Women of the privileged classes possessed the resources to have a clandestine abortion by skilled physicians or to have a medical abortion abroad. Less fortunate women, however, underwent illegal abortions in unsafe and unhygienic circumstances, exacerbating the risk of mutilation or fatal injury (De Keyzer, 2009).
The prosperous economic climate and the simultaneous desecularization in the 1960s created a climate conducive to the growth of movements striving for equal rights among the sexes and for women’s self-determination. These societal transformations took the abortion issue from the realm of taboo to the realm of politics. In 1971 a first law proposal on the liberalization of abortion was submitted in Parliament. This was followed by the first large-scale mobilizations of proponents and opponents of liberalization. However, it took almost twenty years until the Chamber of Representatives finally passed a law which changed the status quo. The debate that took place in this period is known as one of the most significant policy controversies in the political history of Belgium (Witte, Craeybeckx, & Meynen, 1997; Witte, 1993).

Policy controversies such as the abortion debate show dynamic behaviour. As a debate evolves, the positions of political and societal actors converge or diverge. In the case of the Belgian abortion debate, most historical and qualitative social-scientific studies, suggest that the debate polarized increasingly as it evolved (ex. Celis & De Weerdt, 1997; Celis, 1996, 2001; De Keyzer, 2009; Scheys, 1993). However, how do we really know for sure whether a debate is polarising or converging towards consensus? How can we measure how the positions of the protagonist of policy controversy are converging or diverging? There is a lack of formal techniques in the social sciences to measure polarization on the basis of political or societal discourse. As an attempt to fill this methodological gap, this paper presents, through the case of the Belgian abortion debate, a formal technique for the measurement and quantification of the dynamics of policy controversy on the basis of the analysis of discourse.

2. Theory: Policy controversy

Policy controversies, such as debates on abortion, euthanasia, the dangers of electromagnetic fields, traffic mobility, etc., are intractable by nature. Policy debates on these issues are often protracted and conflictuous, and often do not lead to consensus. Rational choice approaches to policy analysis (ex. Coleman, 1982; Laswell, 1971; Lindblom, 1979; Nathan, 1988) do not provide adequate answers as to why policy controversies tend to endure, despite the rising societal costs of a non-decision on the issue. Constructivist policy analysis offers better explanations for the phenomenon. According to this literature, the intractability of policy controversies is the result of the fact that the arguments of the protagonists originate from different modes of rationality (Clegg, 1989). Underlying these modes of rationality are the different frames of reference of the policy actors involved (ex. Falk, 2007; Lenschow & Zito, 1998; Linder, 1995; Schön & Rein, 1994; Verloo, 2005). These
frames of reference, or *frames*, can be understood as intersubjective structures of meaning, which are constituted by sets of idea’s, concepts en categories. They are the central guiding idea’s or narratives which determine the positions of actors on a given policy issue (Gamson & Lasch, 1980). In this paper, policy controversies are therefore defined as *intractable policy conflicts that are the result of the conflicting frames of reference of the protagonists*.

Theoretical work by Schön and Rein (1994) suggest that policy controversy is not dichotomous condition. They conceptualize two kinds of policy conflicts: policy disputes and policy controversies. Policy disputes are disagreements which are easy to solve by taking into account the relevant facts or data. For instance, in the case of bird-flu, once policy makers know how to contain the problem, there is not much disagreement about the steps to be taken. But sometimes policy makers disagree on which facts are relevant to a certain problem, or on how to interpret the facts. For instance, a rise in male unemployment can be understood by one group as an indication of economic decline, whereas it could be interpreted by the other group as an indication that adult males have become more lazy. Moreover, policy disputes can escalate into controversy, and conversely, controversies can subside and transform into simple policy disputes. Therefore, policy disagreements and policy controversy can be conceptualized as the extremes of a continuum. The more the positions of the protagonists in a policy conflict polarize, the more they move towards the extreme of policy controversy. The more they depolarise, the more they move towards simple policy disputes.

Policy conflict can thus be conceptualized as a dynamic phenomenon which can move towards one side or the other on the abovementioned continuum. When the positions of the protagonists move towards policy disagreement, it is assumed that the policy frames of the actors converge. Conversely, policy frames diverge when a conflict polarizes towards policy controversy. Thus, according to this conceptualization, the position of a policy conflict on the theoretical continuum is a function of the reconcilability of the respective policy frames.

The concept of a *frame* is very much related to what is known as *discourse* in constructivist literature (ex. Berger & Luckmann, 1966; Foucault, 1997; Hajer, 1989, 1993, 2002). Both concepts relate to socially constructed systems of meaning. Therefore, in this paper these concepts are used interchangeably.

There is an interaction between discourse and societal practice: On the one hand, discourse gives meaning to actions and practices, but on the other, actions and practices are
constitutive to discourse (Hajer, 1989). A sociological conceptualisation of discourse refers to the existence of various groups in society of which the members share a discourse. In society these groups are engaged in a continuous struggle for discursive hegemony on a vast range of societal problems. In fact, it can be said that this struggle is the very essence of politics (Laclau & Mouffe, 1985; Sederberg, 1984). Groups of societal actors sharing a common discourse are known in literature as discourse coalitions (Hajer, 1993). The method presented in this paper allows for the formal measurement of a number of characteristics of discourse coalitions, in order to analyse the dynamics of policy conflict: It measures whether and how the frames of reference of the protagonist in a policy conflict converge or diverge, and so provides information on the relative amount of polarisation in a policy conflict. A longitudinal measurement of polarisation subsequently offers insight into the dynamics of policy conflict.


3.1 Assumptions and criteria for the measurement of policy conflict

The basic assumption of the method presented in this paper is related to theoretical work on the relational sociology of meaning (Kirchner & Mohr, 2010; Mische, 2011; White, Thiem, & Bucholz, 2007). This literature which reflects on a network conceptualisation of social life, and focuses on relations and ‘streams’ between social actors. It is assumed that the alignment of social actors by shared idea is a relational phenomenon. Discourse coalitions can therefore be represented as network structures.

The method presented in this paper measures the intensity of policy conflict by using four criteria which were derived from theoretical work on policy controversy by Schön and Rein (1994), and from the polarization theory of Esteban and Ray (1994). According to Schön and Rein, policy controversy is a consequence of conflicting policy frames. In the preceding section it was argued that policy conflict can be conceptualized as a continuum between policy disputes and policy controversy. Controversy increases when the respective discourses of the protagonists polarize. Conversely, it decreases when discourses converge. The first criterion will therefore measure the presence of different policy frames.

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1 Examples of social relations are friendships, ties of kinship, or membership of an organisation. Communication or money transfers are ‘streams’ between social actors.
According to Esteban and Ray (1994), polarization is a function of the interaction between intra-group identification and inter-group alienation. As a result, it can be argued that polarization is relatively high whenever the relations within discourse coalitions are strong and the relations between discourse coalitions are weak and/or antagonistic. Conversely, polarization is relatively low whenever the relations within discourse coalitions are weak and the positive relation between discourse coalitions are relatively strong.

**Criterion 1: The presence of different frames**

A policy dispute always involves at least two conflicting groups and at least two conflicting viewpoints or frames. The first criterion measures whether these conflicting groups and frames are present in the discursive space. This is done by looking whether there are distinct discourse coalitions on the one hand, and on the other, whether there are distinct discourses. Both aspects are measured separately, but since the existence of distinct discourse coalitions implies the existence of distinct discourses and vice versa, the double measurement can be viewed as a form of triangulation. The presence and composition of the discourse coalitions will be assessed by the detection and analysis of the clusters of actors in the actor co-occurrence network (cf. infra). The presence of different discourses will be tested by assessing whether the differences in discourse positions between the actors of the respective groups are statistically significant. Inter-group alienation will be assessed by the measurement of, respectively, the shared ideas and the level of disagreement between discourse coalitions.

**Criterion 2: The homogeneity of the discourse coalitions**

The concept of intra-group identification is assessed by measuring the homogeneity of the discourse coalitions. Actors in groups with large quantities of shared ideas arguably identify more with each other than actors in groups with fewer shared ideas. Rising homogeneity of discourse coalitions suggests, in combination with other criteria, rising polarisation. A decrease in group homogeneity suggests depolarisation. Decreasing homogeneity can either be the result of the fact that the policy issue in question has become less important for the protagonists, or it could be the result of an emerging consensus, in which discourse coalitions converge.

**Criterion 3: Shared ideas between discourse coalitions**
The quantity of shared ideas between discourse coalitions is, in combination with the level of disagreement\(^2\), indicative of inter-group alienation. A relatively low quantity of shared ideas suggest heterogeneity and alienation of discourse coalitions, and therefore it can also be indicative of increased polarisation. Conversely, a rise in the quantity of shared ideas suggest increasing convergence and consensus between discourse coalitions.

**Criterion 4: The level of disagreement between discourse coalitions**

The level of explicit disagreement is, in combination with the level of shared ideas, indicative of intra-group alienation. The more ideas the respective parties disagree upon, the higher the level of alienation. To measure the level of disagreement, a network structure based on antagonistic relations is conceptualized: the conflict network (Leifeld & Haunss, 2012). Strong antagonistic relations between discourse coalitions point to high inter-group alienation, and therefore it also suggests relative polarization. Indeed, whenever positions of groups of actors within a policy debate polarise, the disagreement between the groups arguably is expected to rise as well.

**3.2 Technical operationalization**

**3.2.1 Discourse Network Analysis**

Theory on the relational sociology of meaning (cf. supra) suggests that a shared idea between actors create a network relation. A discourse network structure is constructed whenever the relations between actor pairs overlap. The relations between the actors in a discourse network are weighted. The weights of the relations are a function of the amount of shared ideas between the actor pair in question. The higher the quantity of shared ideas, the stronger the network relations between actor pairs.

The abovementioned structure is a network conceptualization of the discursive field which enables a formal analysis and visualization of the characteristics of the network. For instance, a network analytical approach enables the formal analysis of the clusters of actors within the network which make up the discourse coalitions. Moreover, a measurement of the network characteristics over time enables the analysis of the network dynamics.

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\(^2\) Although criteria 3 and 4 both involve the measurement of the same concept, namely intra-group alienation, they are treated as separate criteria. Contrary to criterion 1, in which one variable is measured in two separate ways, criteria 3 and 4 measure separate variables.
The conversion of a policy debate into a network structure is done by a specific form of qualitative content analysis. Content analysis involves the reduction of qualitative data whereby a code is assigned to similar thought units in the text. The coding process can be either inductive, in which the codes emerge from the text, or deductive, in which the codes are deduced from a theoretical framework prior to coding. Conversely, the coding process can also be a combination of inductive and deductive reasoning (ex. Neuendorf, 2002; Saldanha, 2013), as is the case in the current method, in which the coding process is largely an inductive exercise, albeit from a frame-analytical meta-perspective. The latter means that only diagnostic or prognostic statements with regard to the policy problem will be coded.

The construction of a discourse network structure involves the use of a nxm matrix in which the rows represent the actors participating in the debate, and in which the columns represent the codes used in the content analysis. Whenever a certain code applies to an actor, meaning that the actor agrees to the concept corresponding with the code, the corresponding cell in the matrix will be assigned a value 1. Whenever an actor explicitly disagrees with a certain concept, the corresponding cell gets the value -1. The value 0 will be assigned to the remaining empty cells. The resulting matrix is known as the affiliation matrix (Leifeld & Haunss, 2012). The latter corresponds to a bi-partite network structure, the affiliation network, which can be represented as a network diagram.

Figure 1A shows an example of a simple affiliation matrix and its corresponding network. All three actors A, B and C are positively connected to Statement 1, which means that they all agree to it. Actors A and B also agree with Statement 2. However, actor C is negatively connected to the latter, meaning that he/she disagrees with the statement. The basic premise of the method is that the sharing of ideas is a relational phenomenon. Therefore, actors A, B and C constitute a network based on their shared agreement with discursive statements. This network is known as the actor co-occurrence network.

The actor co-occurrence network corresponds to a nxn matrix, in which both rows and columns represent the actors (Leifeld & Haunss, 2012). In social network analysis this...
network is known as the sociomatrix \(^4\) (Wasserman & Faust, 1994). The values in the cells of this matrix correspond to the quantity of shared ideas between pairs of actors. These values in turn correspond to the weights of the links between the actor pairs in the co-occurrence network. Figure 1B shows the sociomatrix and the actor co-occurrence network corresponding to the affiliation network in Figure 1A. In the example, the actors of the dyad (A, B) share two ideas. Therefore, the weight of the link between the actors is \(W_{AB}=2\). On the other hand, the dyads (A, C) and (B, C) only share one idea. Therefore, the weight of the respective links between the actor pairs is \(W_{AC}=W_{BC}=1\).

\[
\begin{bmatrix}
1 & 1 \\
1 & 1 \\
1 & -1
\end{bmatrix}
\]

\[
S_A = \begin{bmatrix}
. & 2 & 1 \\
2 & . & 1 \\
1 & 1 & .
\end{bmatrix}
\]

\[
S_C = \begin{bmatrix}
. & 0 & 1 \\
0 & . & 1 \\
1 & 1 & .
\end{bmatrix}
\]

**Figure 1. Simple discourse network**

The actor co-occurrence network is based on agreement amongst actors. It does therefore not provide information on disagreement (cf. supra). In order to assess the antagonistic relations between actors, another network structure is conceptualized: the conflict network, in which the links are based on disagreement between actors. The affiliation

\[^4\] The diagonals of sociomatrices have no meaning since actors arguably agree with themselves.
The network in Figure 1A shows that actors A and B agree to Statement 1, whereas actor C does not. Therefore, actor pairs (A, C) and (B, C) are also linked by an antagonistic relation with a weight $W_{Ac} = W_{Bc} = 1$. The conflict network corresponding to the above example, shown in Figure 1C, is constituted by the aggregate of these actor pairs.

### 3.2.2 Operationalisation of the four criteria of measurement

In the subsequent section it is explained how the abovementioned criteria of measurement of policy conflict can be formally measured by analysing the actor co-occurrence network and the conflict network.

**Criterion 1a: The presence of distinct discourse coalitions**

This criterion, which is based on theoretical assumptions by Schön and Rein (1994), is measured in two ways. Firstly, the actor co-occurrence network is analysed for the presence of different discourse coalitions. Subsequently, these findings are triangulated by an analysis on the level of the discourse itself, in order to detect the presence of distinct policy frames (see the following criterion).

The actors in the discourse coalitions are more strongly connected to each other than to other actors in the co-occurrence network. In network-theoretical terms these actors are *structural equivalent*. Two actors in a network are structural equivalent whenever they have (approximately) identical relations with the other actors in the network. There are various techniques to find structural equivalent groups in social networks (Wasserman & Faust, 1994). In the method presented groups of structural equivalence will be determined by subjecting the sociomatrix to an agglomerative hierarchical cluster analysis. This algorithm groups entities in subsequent steps, in which the threshold of similarity is lowered with each subsequent step. This results in a nested structure in which the entities are increasingly clustered. This structure can be visualized in a tree graph or in a dendogram. Following the subjection of the sociomatrix to the clustering algorithm, the right set of clusters has to be determined (Everitt, 1993). As suggested by Wasserman and Faust (1994), this decision has to be theory-informed. In this case, Baumgartner et al.’s (2006) conclusion that the structure of policy conflict in parliamentary assemblies tends to yield a very limited amount of policy perspectives is taken into account. Following the “informal” method suggested by Everitt (1993: 73) Baumgartner’s criterion of ‘parsimony’ is followed to determine the amount of discourse coalitions.
One of the drawbacks of hierarchical clustering is the possibility of chaining. This refers to the construction of a large cluster by adding a single object at a time at low fusion levels, rather than adding clusters of objects (Wasserman & Faust 1994; Everitt 1993). Following Wishart (in Everitt 1993), chained objects at low fusion levels will be treated as noise points, or outliers (Vadapalli, Satyanarayana, & Kamamakar, 2006), and therefore are removed from the dataset before further analysis.

**Criterion 1b: The presence of distinct frames/discourses**

By measuring this criterion the focus is shifted from the discourse coalitions, which are groups of actors, to the discourse itself. Firstly this criterion functions as a means of triangulation of the former criterion, and secondly, it offers an insight in the substance of the conflicting discourses, as well as in distance between the discourse positions of the respective coalitions. In order to measure the discourse, the codes resulting from the content analysis are categorized in a number of thematic dimensions, and a measuring scale is constructed for each dimension. This enables the analyst to assess whether the differences in the discourse positions of the respective groups on the dimension scales are statistically significant. If they are, it can be concluded that there are distinct policy frames present in the debate (McBeth & Shanahan, 2005). The affiliation matrix shows actor-statement relations which can have the values 1 (agreement), -1 (disagreement) or 0 (no observation) (cf. supra). By categorizing the statements in various dimensions, the discourse positions of the respective actors can be calculated. This is done calculating the average values, for each respective actor, of the actor-statement links for the respective dimensions, and by subsequently rescaling on a scale between -1 and 1 (Kavadias, 2004).

The discourse positions for a particular dimension of the discourse coalitions equals the average discourse position of all the actors in the coalition. It can be tested whether these average values for respective discourse coalitions are statistically significant. In order to do so a null hypothesis is formulated: $H_0$—there is no difference between the discourse positions of discourse coalitions $X$, $Y$,.. for dimension $D$. Subsequently, an ANOVA, or in the case of two discourse coalitions, a t-test can be used to determine whether $H_0$ can be rejected or not (McBeth & Shanahan, 2005).

**Criterion 2: The group homogeneity of discourse coalitions**

As stated above, polarisation involves relatively high levels of group homogeneity, which is a measure for intra-group identification. The indicator for group homogeneity of a
discourse coalition is the within-group density $\Delta_W$ (Leifeld & Haunss, 2012), which is calculated by dividing the sum of all the weights of the relations of a discourse coalition in the actor co-occurrence network by the number of binary links that are theoretically possible. Thus, for a given discourse coalition, in which $S$ is the sum of the weights of all relations, and in which $g$ corresponds to the amount of actors in the coalition, the within-group density is calculated by the formula $\Delta_W = \frac{S}{g(g-1)/2}$ (Borgatti et al., 2013; Hanneman & Riddle, 2005; Wasserman & Faust, 1994).

**Criterion 3: Shared ideas between conflicting discourse coalitions**

The quantity of shared ideas between discourse coalitions is one of the two variables related to what Esteban and Ray (1994) term as intra-group alienation. This criterion is measured by calculating the between-group density $\Delta_B$ between discourse coalitions in the actor co-occurrence network, which is done by dividing the sum of the weighted links between discourse coalition by the number of binary links that are theoretically possible. Thus, with $S$ as the sum of the weights of the links between a set of discourse coalitions, and with $g_1$ and $g_2$ as the amount of actors in the respective coalitions, the between-group density is calculated by the formula $\Delta_B = \frac{S}{g_1g_2}$ (Stephen P. Borgatti e.a., 2013; Hanneman & Riddle, 2005; Wasserman & Faust, 1994).

**Criterion 4: Disagreement amongst discourse coalitions**

As stated above, intra-group alienation is assessed by measuring the amount of shared ideas between discourse coalitions in conjunction with the level of disagreement between the coalitions. The latter is measured by calculating the between-group density $\Delta_{BC}$ of the conflict network. This is done by dividing the sum of the weighted links between discourse coalition in the conflict network by the number of binary links that are theoretically possible. The formula of $\Delta_{BC}$ is identical to the formula of criterion 3, but it applies to the conflict network.


4.1 Contextualisation
In this section the method presented is exemplified by an analysis of the historical debate on the liberalisation of abortion in the Belgian parliament. Following Celis (2001), the historical abortion debate is conceived as a three-phased process. A subdivision of the debate in consecutive phases is necessary in order to make a longitudinal analysis of the discourse coalitions. The three phases of the abortion debate correspond to the three highest peaks of parliamentary activity on the issue.

The first phase of the debate (1972-1976) involves the ‘Peers affaire’. In January 1973 Willy Peers, a physician, was arrested and charged with performing more than three hundred illegal abortions. The arrest of Peers caused major social uproar, resulting in the first mass-mobilisation of those in favour of a liberalisation of the stringent abortion laws in Belgium. As a consequence, dr. Peers was released a month after his arrest. Because of the public pressure politicians could no longer ignore the issue. The controversy was the first major political breakthrough of the problematique. In the aftermath of the controversy the government agreed with the prosecutor-general to install a judicial truce, resulting in the suspension of prosecutions for a four-year period. One the one hand this measure eased political tensions, but on the other it created a permissive climate that significantly influenced the further development of the abortion issue (Witte, 1993).

In 1974 the government fell. The new government, without the socialist party, who favoured liberalisation, decided pass on the issue to a newly created ‘Commission on ethical problems’ (CEP). Historically, in the Belgian consensus democracy, the ‘commissionization’ of political problems was a classic measure in order to depoliticize controversial issues. Thus, in the subsequent years the abortion debate disappeared into the background. The CEP published its final report in 1976. Although it had done useful study work, the CEP did not succeed in formulating a consentient opinion on the abortion issue. Consequentially, the subsequent Christian Democratic governments did not take any initiative to solve the abortion problem (Celis, 1996).

The judicial truce following the ‘Peers affaire’ led to a factual liberalisation of abortion. However, from the 1980’s onwards prosecutions resumed. This resumption, which led to a number of remarkable trials until the late 80’s, induced the second phase of the historical abortion debate (1978-1982). The parliamentary debate was boosted by a number of proposals asking for the factual suspension of the abortion legislation in order to create a serene atmosphere enabling the protagonists to resolve the issue. Eventually the suspension proposals were rejected by parliament. The main reason for this rejection was the fact that a large number of liberal MP’s, who were in principle in favour of
liberalisation, opposed the proposals by stating that a suspension of aspects of criminal law is unconstitutional (Witte, 1993).

The third phase of the abortion debate (1985-1990) involves the proposals initiated by the senators Lallemand and Herman-Michielsens, members of the socialist and liberal francophone parties respectively. This proposal, which led to actual legislation in 1990, was first issued in 1985. It reconciled the viewpoints of proponents and opponents of liberalisation by combining a relatively liberal regulation until the twelfth week of pregnancy with a more restrictive arrangement for the subsequent period. The proposal was discussed on various occasions in the plenary assembly and in the parliamentary commissions on public health and justice. Following parliamentary elections, the proposal was re-issued in 1989. The opponents of liberalisation, mainly members of the Christian Democratic parties and the nationalist Volksunie, rejected the proposal. However, because of depillarization and the subsequent electoral decline of the Christian Democratic party, the proponents of the proposal managed to pass it into law in 1990, by jumping the isles and forging a temporary coalition with the opposition members in favour of liberalization (Scheys, 1993).

4.2 Measurement

4.2.1 Data, coding and processing

This paper focuses on the debates on the abortion issue in the Belgian Chamber of Representatives. By using the online database of the Chamber, all parliamentary acts in which the Dutch term “abortus” or “zwangerschapsonderbreking”, or the French terms “avortement” or “interruption de grossesse” occur. The resulting documents were filtered for documents containing actual transcripts of debates\(^5\). This resulted in twenty different parliamentary sessions between 1972 and 1990.

The debates were coded inductively, by using a frame-analytical meta-framework. The latter means that the text was coded for diagnostic and prognostic statements referring to the positions of the actors on the issue (cf. supra). As noted above, relational datasets differ from classical datasets. Therefore it is not possible to perform classical inter-coder reliability tests such as Cohen’s Kappa or Krippendorffs Alpha. However, various

\(^5\) A significant quantity of the documents obtained by the search only contained announcements, which were not useful for discourse analysis.
measures were taken to ensure the reliability of the coding process. Firstly, the texts were subjected to a multi-pass coding: they were printed and coded manually first, after which the text and codes were imported in the Discourse Network Analyzer (DNA) software (Leifeld, 2012), and run through a second time. Secondly, by using the DNA software, the texts were checked for contradictory statements. All contradictions resulting from coding error were corrected. And finally, a part of the corpus was coded by a second coder. By using the QAP correlation algorithm in UCINET (S.P. Borgatti, Everett, & Freeman, 2002) it was checked to what degree the sociomatrix of the second coder of that part of the corpus correlates with the corresponding sociomatrix of the first coder. The Pearson correlation between both matrices is very strong (r=.75).

4.2.2 Measurement: analysis of the discourse network

The dynamics of the historical abortion debate were mapped by using the four abovementioned criteria of measurement. By using these criteria it was assessed whether and how the policy conflict was moving towards polarisation or consensus, notwithstanding the formal resolution of the controversy by legislation in 1990.

Criterion 1a: The presence of different discourse coalitions

Figure 2 shows a simplified network\(^6\) diagram resulting from a synchronic analysis\(^7\) the abortion debate (1972-1990). The network nodes represent the MP’s who participated in the debate. The shape of the nodes represent the respective political parties. The distance between the nodes and their location have no significant meaning. However, the UCINET software displays the nodes in a logical and clear configuration (Stephen P. Borgatti e.a., 2013), enabling the analyst to clearly distinguish the clusters visually.

\(^6\) Because of reasons of clarity, the link weights are not represented in the diagram. See the annex for alternative representations.

\(^7\) Contrary to a diachronic analysis, a synchronic analysis does not take into account the dimension of time. Thus a picture is drawn of the discursive structure of the entire debate.
As stated above, the composition of the discourse coalitions in a policy debate can be analysed by performing a hierarchical cluster analysis on the sociomatrix of the actor co-occurrence network. Figure 3 is a graphical representation of the results of the cluster analysis. The tree structure displays two clearly distinguishable clusters. Eighty two MP’s participated in the abortion debate between 1972 and 1990. The cluster analysis reveals that there are two discourse coalitions which are both composed of 41 members. The discourse coalition of the proponents of liberalisation (Cluster/Coalition 1) is composed of socialists (SP and PS), greens (AGALEV and ECOLO), liberals (PRL and PVV) and members of the francophone FDF. One member of the Flemish nationalist Volksunie also belongs to the coalition of the proponents. The discourse coalition of the opponents (Cluster/Coalition 2) was composed by Christian democrats, Flemish nationalists (Volksunie), the far right (Vlaams Belang) and liberals (PRL and PVV). One AGALEV member also belonged to Coalition 2. The liberal family was the most divided faction on the issue: Twelve liberal MEP’s belonged to the discourse coalition of the proponents, whereas five belonged to the opponents.
Criterion 1b: The presence of different discourses

The analysed texts contain a total of 918 statements which were coded into 61 inductive codes. The latter codes were categorized in seven thematic dimensions constitutive of the following measuring scales with values between (-1, 1): LIBERALISATION, STATUS QUO, POLITICAL CRITICISM, TRUCE, PHILOSOPHY OF LAW, WOMEN’S RIGHTS and MORALISM. Independent samples t-tests were performed on the average scores of the two discourse coalitions on the respective dimensions. The following section contains a discussion of the results of this analysis, as well as a discussion of the most salient statements for each dimension. The salience of the arguments is indicated by a percentage, which shows how much a certain statement is shared in proportion to the totality of the discursive field.

The scale LIBERALISATION was constructed with all the codes referring to arguments pro or contra liberalisation. The most salient statements in this scale are the statement that abortion should be liberalized (2,11%), and the statement that abortion should only be used as a means of last resort (0,98%). Discourse Coalition 1, the coalition of the proponents of liberalisation has a positive score on the scale (,094), whereas Discourse Coalition 2 has a negative score (-,103). The difference between these scores is statistically significant ($t = 7,68$, df = 80, $p \leq .001$).

All statements containing arguments with regard to the contemporary legislation were used to construct the scale STATUS QUO. The most salient statements are: abortion creates legal uncertainty (2,85%), repression facilitates clandestine abortion (2,65%) and the status quo fosters social injustice (2,16%). The scores of Discourse Coalitions 1 and 2 on the scale are respectively (.181) and (.014). The different scores are statistically
significant \((t = 4.53, df = 66.03, p \leq 0.001)\). The positive score of the opponents can be explained by the fact that many members of this group admitted that the contemporary legislation on abortion was obsolete, albeit without agreeing to liberalisation.

Statements criticizing the inability of the consecutive governments to make decisions on the issue were constitutive to the scale POLITICAL CRITICISM. The most salient arguments on this scale are that Belgian abortion legislation is outdated in comparison to the neighbouring countries \((2.75\%)\); the proponents blamed the opponents that they blocked all attempts for change \((.94\%)\); and the opponents blamed the proponents that they were not willing to compromise \((.90\%)\). Discourse Coalitions 1 and 2 score respectively \((.118)\) and \((- .016)\) on the scale. The differences are statistically significant \((t = 4.01, df = 73.97, p \leq 0.001)\).

The dimension scale TRUCE was constructed with all the arguments for or against a suspension of the abortion legislation. The most salient statement refers to the desirability of a judicial truce \((4.51\%)\). The most important argument of the proponents to back the desirability of a truce refers to the claim that in the past, a truce has caused a significant drop in clandestine abortions \((0.98\%)\). Critics of the suspension proposals claimed that suspension will lead to a suboptimal permanent situation \((1.74\%)\). The discourse positions of the respective coalitions of proponents and opponents of liberalisation are \((.009)\) and \((- .037)\). The differences are statistically significant \((t = 2.20, df = 52.15, p < .05)\).

The dimension scale PHILOSOPHY OF LAW refers to statements relating to the finality of law. The proponents of liberalisation often claimed that an outdated law must be adjusted \((2.72\%)\) to accommodate societal realities, because of the fact that law does not have the same function as morals \((.93\%)\). The opponents argued the opposite, by claiming that the function of law is to steer society \((.57\%)\) by basing itself on universally accepted moral principles. The discourse coalition of proponents of liberalisation have a score of \((.130)\) on the scale, whereas the opponents score \((.024)\). The difference between both scores is statistically significant \((t = 3.79, df = 74.02, p > .001)\).

All statements with regard to women’s rights were used to construct the dimension scale WOMEN’S RIGHTS. The most important arguments on this scale refer to claims with regard to the necessity of self-determination of women \((1.80\%)\) and representation of women \((0.91\%)\). These claims were forwarded by the proponents of liberalisation \((.155)\), and they were contested by the opponents \((- .049)\). The differences between these discourse positions are statistically significant \((t = 4.56, df = 70.01, p \leq .001)\).
The opponents the liberalisation of abortion used ethical and moral claims to legitimize their opposition. These statements are constitutive to the dimension scale MORALISM. The pro-life argument (2.61%) was the most salient argument within this category. It refers to the belief that life starts at the conception and that it therefore should be protected from then onwards. The second argument on this scale refers to the claim that the liberalisation of abortion would lead to immorality and social decay (1.61%). The opponents of liberalisation have a relatively high positive score on this scale (.189), whereas the proponents score negatively (-.055). These differences are statistically significant ($t = -6.79\, df = 70.71\, p < .001$).

<table>
<thead>
<tr>
<th>Concept</th>
<th>Discourse coalition</th>
<th>Discourse position</th>
<th>$t$-value</th>
<th>df</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBERALISATION</td>
<td>Pro abortion</td>
<td>.0941</td>
<td>7.68</td>
<td>80</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>-.1028</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STATUS QUO</td>
<td>Pro abortion</td>
<td>.1812</td>
<td>4.53</td>
<td>66.03</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>.0139</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLITICAL CRITICISM</td>
<td>Pro abortion</td>
<td>.1179</td>
<td>4.01</td>
<td>73.97</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>-.0163</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUCE</td>
<td>Pro abortion</td>
<td>.0087</td>
<td>2.20</td>
<td>52.15</td>
<td>.032*</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>-.0366</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHILOSOPHY OF LAW</td>
<td>Pro abortion</td>
<td>.1301</td>
<td>3.79</td>
<td>74.02</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>-.0244</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WOMEN’S RIGHTS</td>
<td>Pro abortion</td>
<td>.1545</td>
<td>4.56</td>
<td>70.01</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>-.0488</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MORALISM</td>
<td>Pro abortion</td>
<td>-.0549</td>
<td>-6.79</td>
<td>70.71</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td>Anti abortion</td>
<td>.1890</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 1: Dimension scales of the abortion debate*

The differences between the discourse positions of the respective discourse coalitions are statistically significant for all seven dimensions. Therefore, it can be formally concluded that the debate involves two different policy frames (McBeth & Shanahan, 2005). The dimension scale MORALISM shows the largest spread between the discourse positions of the respective groups (spread = .244). The spread on the WOMEN’S RIGHTS scale is also relatively high (spread = .203). This suggests that the conflict between both groups is at its sharpest whenever the traditional Christian values of the opponents are put in opposition to secular humanism of the proponents.

The distance of discourse positions is at its smallest on the TRUCE scale (spread = .045). This is explained by the observation that most liberals favouring liberalisation opposed the suspension of the abortion law due to constitutional concerns.
Both discourse coalition score positively on the STATUS QUO scale, albeit with a relatively large spread (spread = .167). Proponents as opponents agreed that the existing legislation combined with a factual policy of tolerance was unsustainable. However, the criticisms of the proponents of liberalisation reached further than those of the opponents, which explains the higher score of the former.

**Criterion 2: group homogeneity of discourse coalitions**

Table 2 displays the evolution of the within-group densities $\Delta_w$ of the discourse coalitions over the three phases of the abortion debate. The density values were derived from a normalized actor-co-occurrence network in order to make them comparable. Normalisation is achieved using the DNA software, which divides the weights of the links between actor pairs by the average number of codes assigned to these actors (Leifeld, 2012).

<table>
<thead>
<tr>
<th>Phase</th>
<th>(coalition1) $\Delta_w$</th>
<th>(coalition2) $\Delta_w$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 ('72-'75)</td>
<td>.102</td>
<td>.133</td>
</tr>
<tr>
<td>Phase 2 ('78-'82)</td>
<td>.194</td>
<td>.191</td>
</tr>
<tr>
<td>Phase 3 ('85-'90)</td>
<td>.292</td>
<td>.336</td>
</tr>
</tbody>
</table>

*Table 2: Within-group densities of the discourse coalitions*

The results show that the group homogeneities of the discourse coalitions have approximately tripled. Put differently, the intra-group identification of the discourse coalitions has increased with a factor 3. This significant increase of group homogeneity over time suggests that the argumentative apparatuses of the respective discourse coalitions have grown more coherent and complex. This in turn suggests that the conflicting parties increasingly ‘dug themselves in’ in their positions over time.

**Criterion 3: Shared ideas between conflicting discourse coalitions**

As noted, a measurement of the amount of shared beliefs and of the level of disagreement between discourse coalitions offers information about the level of alienation of the protagonists in a policy conflict. The evolution of the quantity of shared ideas was mapped by a longitudinal measurement of the in-between densities of the discourse coalitions. This evolution is shown in the first column of the table. The figures point out that the amount of shared ideas between the discourse coalitions has slightly risen in absolute terms over the period. However, it is wrong to conclude that this is an indication of gradual convergence of ideas. Indeed, it is to be taken into account that, while the average group
homogeneity has risen with a factor 2.67, the amount of shared ideas has only risen with a factor 1.25. Therefore it can be argued that, while the argumentative apparatuses of the respective discourse coalitions have grown over time, the amount of shared ideas has decreased in proportional terms.

<table>
<thead>
<tr>
<th></th>
<th>$\Delta t$</th>
<th>$\Delta t/\text{AVG}(\Delta w)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 ('72-'75)</td>
<td>.056</td>
<td>.476</td>
</tr>
<tr>
<td>Phase 2 ('78-'82)</td>
<td>.063</td>
<td>.327</td>
</tr>
<tr>
<td>Phase 3 ('85-'90)</td>
<td>.070</td>
<td>.223</td>
</tr>
</tbody>
</table>

*Table 3: Between-group densities actor co-occurrence NW*

The figures in the second column of Table 3 correspond to the within-group density in proportion to the average between-group density, for all three phases of the debate. These results point out that, in the first phase of the debate, the proportion of shared ideas between discourse coalitions was (.48), whereas for the last phase this figure has dropped to (.22). This suggest that the respective discourses have increasingly compartmentalized over time.

**Criterion 4: Disagreement amongst discourse coalitions**

The level of disagreement amongst discourse coalitions is measured by the between-group density of the conflict network $\Delta_{BC}$. Table 4 shows the normalized results for the three periods of measurement.

<table>
<thead>
<tr>
<th></th>
<th>$\Delta_{BC}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 ('72-'75)</td>
<td>.030</td>
</tr>
<tr>
<td>Phase 2 ('78-'82)</td>
<td>.072</td>
</tr>
<tr>
<td>Phase 3 ('85-'90)</td>
<td>.137</td>
</tr>
</tbody>
</table>

*Table 4: Between-group densities conflict NW*

The figure point out that the level of disagreement amongst the discourse coalitions has risen with a factor 4.6 over time. This is rise is much larger than the average rise of group homogeneities (factor 2.5; cf. supra). This leads to the conclusion that, while the
argumentative apparatuses have grown during the course of the debate, the additional statements, arguments and ideas have been increasingly subject to contestation.

**In sum**

According to Schön and Rein (1994), the phenomena underlying policy controversy are conflicting policy frames. In the first part of this paper it was argued that policy conflict can be envisaged as a theoretical continuum. To know the position of a policy conflict on this continuum, the amount of convergence and/or divergence of policy frames, or put differently, the level of polarization of policy frames, should be assessed. According to the polarization theory of Esteban and Ray (1994), political polarization is a function of intra-group identification ad inter-group alienation. Four criteria of measurement were derived on the basis of the abovementioned theoretical assumptions.

The cluster analysis of the actor co-occurrence network of the abortion debate points out two distinct discourse coalitions. The existence of two discourse coalitions implies the existence of two discourses. The latter was confirmed by calculating the discourse positions of the respective coalitions on seven dimension scales, and by checking whether the differences in positions are statistically significant. The longitudinal measurement of the group homogeneities points out an increase in intra-group identification. Over the measurement period, an increase in inter-group alienation has taken place. The latter can be concluded by the observation of a relative decrease in shared ideas and an increase in the level of disagreement amongst discourse coalitions. The above measurements lead to the formal conclusion that the debate increasingly polarized over time.

This conclusion refutes the thesis of some Christian Democratic MP’s that they had been bypassed despite the fact that a compromise was within reach (De Kamer, 1990A, 1990B). On the contrary, the analysis formally points out that the process was characterized by an increasing divergence of ideas rather than convergence. Indeed, the settlement of the controversy is merely the result of shift in political power that made it possible to create an alternative majority of proponents of liberalisation, which outnumbered the opponents.

5. **Conclusion**

The above case study demonstrates that discourse network analysis offers new possibilities for the measurement of political conflict and polarization. The method offers a means of standardization, formalization and visualization of discourse coalitions.
involved in socio-political problems. Therefore it can complement ‘classic’ qualitative analyses of policy processes and controversies, which are at time criticized for lacking scientific standards (ex. Sabatier, 2000). The case study presented was limited to the analysis of discourse in one policy venue only (cf. Fischer et al., 2013; Jacobs, 1998). However, the method lends itself to analyse policy controversy over broader segments of the policy universe, offering a means to measure and map the dynamics of policy conflict on the level of the whole society (ex. Hajer, 1993; Leifeld & Haunss, 2012). The discursive method for the measurement of polarization differs significantly from mainstream literature on the measurement of the concept. The latter is largely based on the measurement of public or elite opinion through survey research (ex. Baldassari & Gelman, 2008; Iyendgar et al., 2012; Mair, 2001; Stroud, 2010). Although proven very useful in other sub-disciplines, such as public opinion research, these methods are less useful for the study of policy processes. For instance, it is problematic to survey some policy actors and organisations within the policy universe, such as lobby groups, NGO’s, etc.. These organisations do, however, produce many documents such as, for instance, policy briefs, press releases, etc.. The method presented makes it possible to measure policy positions and polarization by discourse analysis of documents and other qualitative sources such as speeches or interview transcripts. Moreover, the inductive approach has the potential to offer rich and deep analyses of specific policy conflicts (Bryman, 2012).

The method in itself is largely descriptive, but it does open perspectives which transcend the descriptive. Indeed, it enables formal comparative analysis of policy controversies, which opens possibilities for the construction of typologies of policy conflict. This could lead the theory formation on the relationship between the characteristics of the policy conflict on the one hand, and the specific nature of the policy issue on the other. For instance, “old” and “new” theories on socio-political cleavages do not offer much insight in the structure and systematique of “new” policy issues such as climate change, traffic mobility, the internet, terrorism, etc... A formal comparative analysis of policy controversies involving these issues could provide more insight in their systematique.

Moreover, the analysis of policy conflict with discourse network analysis is relevant for applied research on the resolution of intractable policy problems (ex. Hajer, 1993; Lenschow & Zito, 1998; McBeth & Shanahan, 2005; Rein & Schön, 1996; Throgmorton, 1992). The literature on policy controversy suggests that that the presence of diverging policy frames is a necessary (albeit not sufficient) condition for policy controversy. Hence, the formal measurement of policy conflict has a predictive value: a debate in which
conflicting policy frames are clearly distinguishable have a greater potential to end up in controversy than debates in which this is not the case.

Moreover, the predictive value of the method can be expanded. As suggested above, comparative research of the formal features of policy controversies could lead to the construction of a typology. This in turn could be used to develop an instrument for the prediction of the dynamics of policy controversy.

Finally, the method offers possibilities that have fallen out of the range of the methodological exposition in this paper. The analysis of discourse coalitions is based on a conceptualization of discursive space as a network of actors who are connected by common ideas, the actor co-occurrence network (cf. supra). However, discursive space can also be conceptualized as a network of ideas and concepts. The relations in this network are based on co-occurrence of concepts. The relations in this network occur whenever a concept pair can be attributed to an actor. The resulting network is the concept-co occurrence network, which opens the possibility for formal inductive discourse analysis, not by measuring the discourse coalitions, but by measuring the discourses themselves. This opens possibilities for formal and standardized inductive frame analysis.

To conclude, discourse network analysis is a novel formal method for the measurement of policy conflict based on the analysis of political discourse. It allows for a quantitative measurement of the intensity and the dynamics of policy conflict. The method offers a means to objectify and thus complement qualitative inquiries into policy controversies. A comparative approach towards the formal characteristics of policy conflict opens possibilities for theory formation on the systematique of various kinds of policy controversies, as well for the development of instruments for the prediction of the dynamics and possible outcomes of policy controversies.

Bibliography


Appendix: Alternative visualisations

1. Synchronic actor co-occurrence network (cf. Figure 1)

2. Synchronic conflict network
3. Evolution of the actor co-occurrence network
4. Evolution of the conflict network

1972-1975

1978-1982

1985-1990