
Matching Voters with Parties and Candidates

Voting Advice Applications
in a Comparative Perspective

Edited by
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Chapter One

Voting Advice Applications in a Comparative Perspective: An Introduction

Stefan Marschall and Diego Garzia

The success story of VAAs

At the verge of the new millennium, the internet has emerged as a new player in political communication, supplementing and partly substituting traditional media such as television, radio and newspapers. Nowadays, the internet represents a major source of political information, communication and participation for a growing number of citizens (Zittel and Fuchs 2007; Norris and Curtice 2008). Not only parties and candidates but also non-party organizations offer online political platforms (Farrell and Schmitt-Beck 2008). This book will focus on one type of non-party online tool that has mushroomed within the last years in European countries and beyond: Voting Advice Applications (hereafter: VAAs). These applications assist voters in the electoral decision by comparing their policy preferences with the programmatic stances of political parties and/or candidates. VAA users are prompted to fill in a web-questionnaire marking their positions on an ample range of policy ‘statements’ (e.g. ‘social programmes should be maintained even at the cost of higher taxes’ or ‘abortion should be forbidden’). After comparing the user’s answers with the position of each party and/or candidate on the various statements, the application produces a result in the form of a rank-ordered list or a graph displaying which party or candidate stands closest to the user’s policy preferences.

Voting Advice Applications have turned into a widespread online feature of electoral campaigns in Europe, attracting a growing interest from citizens (Garzia and Marschall 2012) as well as within the political science community (Cedroni and Garzia, 2010; Triga *et al.* 2012; Garzia *et al.* 2014). In some countries, VAAs like the *Stemwijzer* (Netherlands) or the *Wahl-O-Mat* (Germany) have developed into outstandingly popular political web applications used by millions of voters at election time. VAAs have not only been deployed on the national level. Before the EU elections of 2009, a supranational VAA was launched under the auspices of the Florence-based European University Institute. In only six weeks, the *EU Profiler* was able to attract more than 2.5 million users from all around the continent. A second transnational tool – *VoteMatch Europe* – was offered for the same elections by a consortium of national VAA makers. Also for the European Elections of 2014, several initiatives have been launched offering national as well transnational Voting Advice Applications throughout Europe.

The (offline) history of VAAs started in the late 1980s. What can be considered the ‘ancestor’ of all VAAs, the *StemWijzer*, was developed in 1989 by the Dutch Stichting Burgerschapskunde in collaboration with the Documentatiecentrum Nederlandse Politieke Partijen and the faculty of Political Management at the University of Twente. The *StemWijzer* package consisted of a small booklet with 60 statements taken from political party manifestos and a diskette. An internet-based *StemWijzer* was released a few years later, on the occasion of the 1998 parliamentary elections. In the following years, *StemWijzer* grew into the most used political application on the internet by Dutch voters at election time. From 50 sold brochures in 1989 to 6.500 given advices in 1998, the number of users rose to more than 2 million in both 2002 and 2003, then up to about 5 million in the elections that followed (de Graaf 2010). Throughout the years, the *Stemwijzer* kept its distinctive simplicity intact through a limited number of response categories (i.e. ‘yes’ and ‘no’, plus a neutral option), an intuitive matching algorithm and visualization of results through a ‘match-list’ (see Figure 1.1).

At the beginning of the new century, the highly successful experience of *StemWijzer* was exported to several other countries, such as Germany, where *Wahl-O-Mat* was fielded for the first time in 2002 and quickly became the most used VAA in the world in absolute numbers (Marschall and Schmidt 2010). Its most recent version, launched before the German federal election of 2013, accounted for over 13 million user sessions. Further versions of the Dutch pioneering VAA also appeared in Bulgaria (*Glasovoditel*) and Switzerland (*Politarena*). Besides Switzerland and Germany, Belgium has also been inspired by the Dutch example. In 2004, the Flemish public broadcaster VRT launched *Doe de Stem Test!* – a VAA for the regional elections of that year. The Flemish VAA was able to issue over 840,000 voting advices during that campaign (Walgrave *et al.* 2008). A similar media-driven development can be observed in the case of Finland. The public broadcasting company developed the first VAA already in 1996. Following this example, *Helsingin Sanomat* (the largest daily newspaper in Finland) built its own application in occasion of the 1999 EP election. In 2007, as many as twenty different VAAs were available to Finnish voters, with the most popular among these applications attracting over a million users (Ruusuvirta 2010).

Apart from the expansion of the *Stemwijzer* model, a second VAA type contributed to the success story of Voting Advice Applications: the Dutch *Kieskompas*. This VAA was explicitly designed as an alternative to the *Stemwijzer* by implementing different methods for the positioning of the parties/candidates and for calculating and displaying the issue congruence between the users and the political supply (see Figure 1.2). In the Netherlands, *Kieskompas* has become a strong rival of *Stemwijzer* attracting 1.5 million users in 2010. The *Kieskompas* prototype was transferred to many other countries (e.g. Belgium, France, Israel, Portugal, Sweden, Turkey as well as several Arabian and Southern American countries) and also served as a prototype for the *EU Profiler* at the European elections of 2009 (Breuer 2010; Trechsel and Mair 2011).

Some of the most innovative features of the *EU Profiler* (especially in terms of visualizations, see Figure 1.3) were indeed inspired by the forerunner of a third family of VAAs: the Swiss *smartvote*. Launched in 2003 as a competitor

Figure 1.1: A Stemwijzer statement (left), the match-list (right)



Figure 1.2: A EU Profiler statement (left), the two-dimensional matching (right)

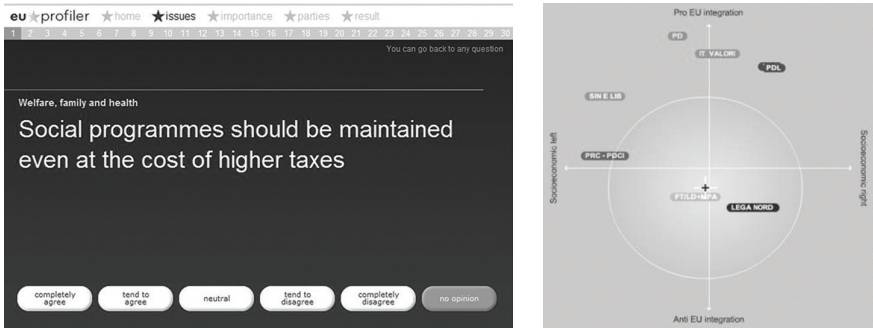
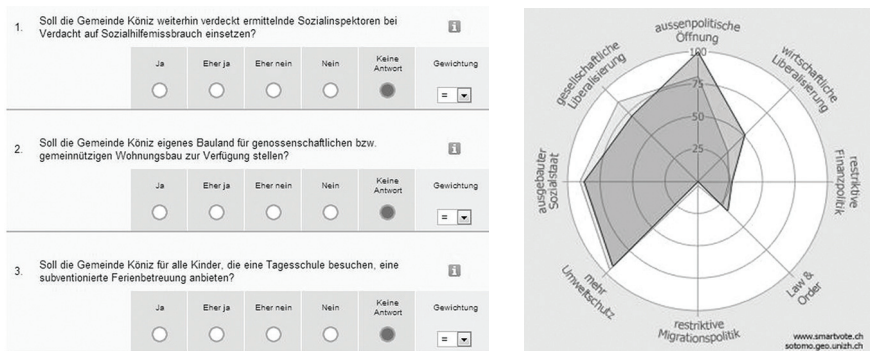


Figure 1.3: The smartvote questionnaire (left), the 'smartspider' matching (right)



See <http://press.ecpr.eu/resources.asp> for full colour figures.

of *Politarena*, this VAA experienced an astonishing career. The first version of *smartvote* in 2003 provided over 255,000 voting advices. In only four years, the use of *smartvote* had increased almost fourfold, with about a million voting advices issued in 2007 (Ladner *et al.* 2010). Apart from contributing to the development of the *EU Profiler*, the *smartvote* team successfully exported their model to other European democracies (e.g. Bulgaria, Luxembourg, Scotland).

Due to these developments, practically all European countries – but also many other democracies and transformation countries – have VAA experiences. Focusing on VAA versions that have been developed on the national level, over 40 online tools of this kind have been implemented in Europe within the last few years. Apart from very few exceptions, all European countries can be considered familiar with VAAs (for an extensive discussion, *see* Garzia and Marschall 2012).

How could such a success story be explained? Why have these tools spread over the world and why are they so attractive to many voters? Regarding their expansion in and beyond the European countries, a snow-balling effect can be observed. Once a VAA has become successful in a country and this phenomenon is then observed by or communicated to actors such as media or organisations of civic education in other countries, these actors ‘import’ the idea into their own national contexts. Certain channels served to promote the spread of VAAs, e.g. the Network of European Citizenship Education (NECE) – a group that encompasses agencies and NGOs in the field of citizenship education from more than 25 European countries, serving as a forum on which VAA projects were presented early on. The production of the *EU Profiler* for all EU countries relying on the support of local expert teams also served as a channel of dissemination of the VAA idea. As well, the *Kieskompas* initiative has been very active in recruiting new countries for Voting Advice Applications.

Concerning their attractiveness for users, the spread of Internet communication could be seen as a main driving force for the success of Voting Advice Applications, since the popularity of these tools is related to their online existence, as is illustrated by the offline/online history of *Stemwijzer*. The unique and intriguing functionality of VAAs completely unfolds once the questionnaires have been implemented as user-friendly online tools (Alvarez *et al.* 2014). The general spread of the internet in recent years has supported the rise of VAAs. The more people have used the net for their political communication and for collection of information, the larger the potential VAA user-group has become.

Referring to general tendencies within political behaviour in modern democracies, the erosion of cleavage-based voting (Franklin *et al.* 1992) and partisan alignments (Dalton and Wattenberg 2000) in Western democracies might have augmented the number of floating, undecided voters who resort to VAAs in order to find orientation for their voting decision (Garzia 2010; 2012). A number of additional, context-specific conditions can also account for the success of VAAs. For example, the way in which traditional mass media promote these applications is a key to understanding the popularity of (some of the) VAAs (Ruusuvirta 2010; Carkoglu *et al.* 2012). Indeed, the countries in which VAAs enjoy the widest popularity are also those in which VAAs are the protagonist of a national TV show (Walgrave *et al.* 2008).

Chapter Four

What's Behind a Matching Algorithm? A Critical Assessment of How Voting Advice Applications Produce Voting Recommendations

Fernando Mendez

Voting Advice Applications (VAAs) have enjoyed a growing popularity in recent years, especially in Europe, and are increasingly attracting the attention of political scientists and researchers investigating the impact of new technologies on society and politics. Reflecting this interest, an emergent literature has begun to critically evaluate the promises and possible problems with VAAs (for recent reviews *see* Cedroni and Garzia 2010; Triga *et al.* 2012). This chapter follows this line of inquiry by taking up a core methodological aspect related to the design of VAAs: how are policy preferences aggregated to match respondents with candidates/parties? In other words, this chapter deals with a core function of a VAA – its explicit (or implicit) recommendation. Given the centrality of this VAA function, it is paradoxical how little attention has been paid to matching algorithms by the political science community.

I begin by outlining the two main preference-matching techniques used in VAAs, which are based on low-dimensional and high-dimensional modelling. The aim is to describe some of the theoretical assumptions that underpin this type of matching. The following section then describes the datasets generated by a number of VAA experiences and the methodology I will deploy for testing the performance of various matching algorithms. The next section presents the results of various empirical tests of high-dimensional and low-dimensional models on real-world data. The discussion in the concluding section then relates the analysis back to questions of further VAA design and development.

Theoretical models and assumptions

The idea behind VAAs is to allow citizens to better define their own subjective, political preferences and to match these with the stated (or academically coded) preferences of candidates or political parties that are stored in the online application. To this end, the core output of most VAAs is usually a similarity score between the respondent and the parties/candidates across the 30-odd policy statements typically included in a VAA. In such cases, the VAA's algorithm is performing a match in

a high-dimensional policy space – the exact dimensionality being determined by the number of policy items included in the VAA. This is not the only preference match used in VAAs, however. In most VAAs a low-dimensional match based on the spatial positioning of the respondent *vis-à-vis* the parties/candidates is also provided. Although the number of dimensions may vary, the theory underling both types of matches is essentially the same.

Currently, VAAs draw on a social choice theory of democracy (Downs 1957).¹ The respondent is assumed to be an ‘issue voter’ whose vote choice is based on the range of policy options dominating the campaign, rather than a voter motivated by other considerations, such as their emotional attachment to a party (known as party identification), their subjective evaluation of leaders (i.e. valence considerations), their personal economic gain (sometimes known as economic voting). We know that all these other factors can influence vote choice, however, these are not factored into present VAA design. VAAs are predicated on a rational, programmatic logic of voting, referred to as ‘issue-voting’. Furthermore, within the issue-voting model VAAs are mostly based on a proximity model. Such a model draws on a spatial theory of electoral choice whereby a voter chooses the party/candidate whose policy position is most proximate to theirs (Westholm 1997; Tomz and Houweling 2008). Proximity models form the theoretical basis of a VAA and determine the choice of metric for matching VAA respondents to candidates/parties.

High-dimensional models

Most VAA designers adopt a City Block metric in their proximity model for matching in high-dimensional space (e.g. *smartvote* and the *EU Profiler*). There are other metrics even within the proximity model, such as a Euclidean metric. Furthermore, there is also a well-known competing theory of issue-voting: the ‘directional model’ (which is based on Rabinowitz and Macdonald 1989). In such models the policy dimension is conceptualised rather differently (Westholm 1997; Tomz and Houweling 2008; Lacy and Paolino 2010). Whereas in a proximity model what matters most is the distance between the policy alternatives, in the directional model what matters most is for the voter and candidate/party to be on the ‘correct side’ of the argument. Indeed, according to directional theories, not only do citizens not tend to distinguish between fine policy gradations but, within certain bounds of acceptability, they also prefer more extreme candidates/parties. It is possible to represent the differences in the metrics or algorithm used in a VAA in matrix form (this builds on Mendez 2012). In principle, at least two different metrics, Euclidean and City Block, can be used for proximity models. For the directional model of issue-voting the Scalar Product metric has been proposed by Rabinowitz and Macdonald (1989).

1. It is worth pointing out that alternative high-dimensional matching algorithms have been used based on the logic of recommendation systems. These applications draw on the field of computer science.

Let us begin with a typical matching matrix for a VAA based on City Block logic:

	<i>CA</i>	<i>A</i>	<i>N</i>	<i>D</i>	<i>CD</i>
<i>CA</i>	1	0.5	0	-0.5	-1
<i>A</i>	0.5	1	0.5	0	-0.5
<i>N</i>	0	0.5	1	0.5	0
<i>D</i>	-0.5	0	0.5	1	0.5
<i>CD</i>	-1	-0.5	0	0.5	1

The headings in the columns and rows are based on a five-point Likert scale with the following answer categories: Completely Agree (CA); Agree (A); Neither Agree nor Disagree (N); Disagree (D); Completely Disagree (CD). The numbers in the cells of the matrix represent the points assigned for a ‘hit’ by the VAA algorithm when a voter (rows) and a candidate (columns) lands in one of the possible cells for each policy statement. The scale ranges from -1 to +1. Excluding the ‘no opinion’ answer category from the matrix, this results in 25 possible ‘matches’ between a respondent and candidate. The distances are scaled so that the maximum distance, e.g. a ‘completely agree’ by a voter and a ‘completely disagree’ by a candidate, equals -1. A perfect match, e.g. ‘completely agree’ by both voter and candidate, equals 1. The overall similarity coefficient is calculated by summing the total number of points and dividing by the total number of items. Having presented the City Block matrix and its underlying logic we can now take a look at alternative algorithms for calculating similarity scores.

A Euclidean square model:

	<i>CA</i>	<i>A</i>	<i>N</i>	<i>D</i>	<i>CD</i>
<i>CA</i>	1	0.875	0.5	-0.125	-1
<i>A</i>	0.875	1	0.875	0.5	-0.125
<i>N</i>	0.5	0.875	1	0.875	0.5
<i>D</i>	-0.125	0.5	0.875	1	0.875
<i>CD</i>	-1	-0.125	0.5	0.875	1

A directional model based on a Scalar Product metric:

	CA	A	N	D	CD
CA	1	0.5	0	-0.5	-1
A	0.5	0.25	0	-0.25	-0.5
N	0	0	0	0	0
D	-0.5	-0.25	0	0.25	0.5
CD	-1	-0.5	0	0.5	1

A fourth, Hybrid model is introduced, inspired by directional logic:

	CA	A	N	D	CD
CA	1	0.5	0	-0.5	-1
A	0.5	0.625	0.25	-0.125	-0.5
N	0	0.25	0.5	0.25	0
D	-0.5	-0.125	0.25	0.625	0.5
CD	-1	-0.5	0	0.5	1

The Hybrid model simply splits the difference in the matching scores between the City Block proximity model and the directional model based on the Scalar Product matrices above. A key difference can be seen from the respective scores attached to a match on ‘neither agree nor disagree’ by a voter (row) and a candidate (column). In the Hybrid model the score of 0.5 is half-way between the Scalar Product score (0 points) and the proximity model (1 point). Indeed, the 0.5 score for a match in the ‘neither agree nor disagree’ cell captures the intuition that prospective voters/candidates can see both sides of the argument on a given policy issue. A further difference in the Hybrid model is that it aims to capture the intensity of a preference. In short, the Hybrid model conceives the middle category differently whilst also taking intensity of preferences into account.

Low-dimensional models

Low-dimensional modelling can be seen as analogous to a proximity match in high-dimensional space. The logic is the same: a respondent should prefer the closest-matched party/candidate depicted in the spatial maps. The difference relates to the number of dimensions used to calculate a respondent’s position in the spatial maps provided by the VAA, which is not determined by the number of VAA policy items but rather by ex-ante assumptions of the dimensionality of the political space. Typically, low-dimensional matching is based on the two dimensions that are widely held to define the issue space in most Western democracies – a cultural

Chapter Fourteen

Does the Electoral System Influence the Political Positions of Parties and Candidates? Answers from VAA-Research

Andreas Ladner

Voting Advice Applications (VAAs) not only provide voters with information about parties and candidates running for elections, they also gather a huge amount of information about their users and the parties and candidates they are supposed to vote for.¹ This information can be of utmost interest for political scientists.

In this chapter we shall – on the basis of VAA data – address a question which has been debated for quite some time: What is the impact of the electoral system on the positioning of parties and candidates in the course of electoral campaigns? Do majority systems really encourage parties to cluster around the centre of the political space whereas proportional systems (PR) foster greater ideological divergence, or are there other variables which might account for the ideological distance between the different parties? The theoretical arguments for these questions go back to Downs' (1957) theory of the median voter and Duverger's (1954) law, which claims that majority voting promotes two-party systems. More recent work, however, brings forward some quite contradictory empirical findings (Dow 2001, 2010; Ezrow 2008; Curini and Hino 2012).

The Swiss political system and the data from the Swiss VAA *smartvote* offer an excellent opportunity to contribute empirical evidence to this debate. The elections for the two chambers of the national parliament take place the same day, in the same constituencies but under two distinct electoral systems, with PR for one and majority voting for the other chamber. As for the data, it is the specific use of the VAA which outreaches the data from electoral studies in general. The nearly 3,600 candidates running for the two houses not only have very strong incentives to participate, which leads to more comprehensive data than traditional candidate surveys provide, but they also do it with the voters they want to address in mind, which reveals their strategic intentions to attract the voters they think they need to get elected. Since the users (voters) of *smartvote* reveal their political positions on the basis of the same questions, we are able to measure the distance between the candidates and different groups of voters directly. It is thus the quality and the quantity of the data and the instrumental use of the VAA by the candidates which lead to a promising research setting to answer the question outlined above.

1. There are, of course, also data protection issues at stake here. Such issues are not addressed in this paper.

I shall start this chapter by presenting the theoretical considerations behind the questions addressed and the empirical findings so far. Then I will introduce the context of analysis and present the findings. The chapter ends with a conclusion and a roadmap for further research.

Theoretical considerations

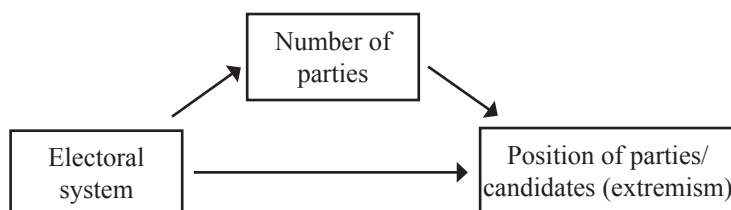
Studying the impact of electoral systems on distribution and preservation of power, on parties and political representation, on conflict resolution and political stability belongs to the core interests of a political scientist. It is generally believed that electoral systems matter and this serves as a proof that political institutions – which can be engineered by people – produce specific, more or less adequate outcomes. The electoral system in this perspective is seen as an independent variable and not as a consequence of pre-existing cultural or political circumstances. The impact of the electoral systems in our field of research operates in a twofold manner: directly, on the political positions of parties and candidates, and indirectly, through the number of parties, which itself has an influence on the positions of parties and candidates (*see* Figure 14.1).

The arguments behind such a conceptualisation go back to authors like Duverger and Downs. According to Duverger's law, a majority vote in one ballot is conducive to a two-party system; whereas proportional representation is conducive to a multiparty system. A majority vote on two ballots, finally, is conducive to a multiparty system, inclined toward forming coalitions (Duverger 1954). Whereas for Downs (1957) it is basically the median voter mechanism motivating parties in a two-party system to opt for a position in the centre of the political spectrum where the crucial voter needed to get more than 50 per cent of the votes is likely to be found. As for the more recent literature, the different positions are nicely summarised by Ezrow (2008: 482 ff.).

The conventional – ideal-type-like – understanding in the spatial modelling study by Cox (1990) claims that proportional electoral rules exert centrifugal incentives that motivate parties to present non-centrist policy programs. Parties have weaker incentives to maximise votes in a proportional system (Dow 2001) than they do in a majority system, where disproportionality is high and the winner takes it all. It is in the latter systems where parties have to cluster around the centre in order to win, whereas in the former they are freer to bring forward their true policy beliefs and still get a proportional share of the seats. Therefore, more extreme party positions are more likely to occur in PR.

As for the indirect effect, Cox (1990) concludes that the greater the number of competitors in a political system, the stronger the expectations that some of these parties will present non-centrist positions. Merrill and Adams (2002) argue very similarly that the vote-seeking politicians' centrifugal incentives grow stronger when the number of parties increases. Since the number of parties (for a measurement, *see* Taagepera and Shugart 1989) is presumably higher in PR systems, it is again PR constituencies being more often confronted with party extremism.

Figure 14.1: Direct and indirect effects of the electoral system on the political positions of parties/candidates



There are, however, also contributions which question the ideal-type way of arguing. Interesting to remember here is the work of Sartori (1976), which makes – at least theoretically – for highly fragmented party systems (i.e. with a high effective number of parties) a distinction between segmented multipartism and a polarised multipartism, which means that there must also be party systems with more than two (or three) parties where party competition is clustered around the centre. In a similar vein, Green-Pedersen (2004: 326) insists that if there is a strong centre party the chances of finding a centripetal party competition are as high as in a two-party system. Finally, it was Hans Daalder (1984) who had already claimed that it is more reasonable to believe that in systems with three or more parties (if there is at least one party having a position between the others) there might be centrifugal and centripetal tendencies in party competition. It might, for example, be the case that maximising votes is less important than being included in a coalition. Especially for smaller parties, a centrist position can thus become attractive (Schofield *et al.* 1999). There have also been attempts to introduce strategic incentives related to party activists. Some party activists – holding more extreme positions – provide campaign resources such as money and time (Miller and Schofield 2003). Another argument stresses the strategic implications of ‘valence’ dimensions of party evaluation, i.e. dimensions related to voters’ impression of party elites’ competence, honesty or charisma (Stokes 1963). Valence-disadvantaged parties have electoral incentives to differentiate themselves on policy grounds because if they present centrist policies that are similar to those advocated by valence-advantaged parties they will have no chances to be successful (Schofield and Sened 2005).

In a nutshell, there are strong arguments that PR fosters party extremism either directly or indirectly through more parties, but there are also arguments that PR can go hand in hand with more moderate party positions. Parties are more than catch-all (Kirchheimer 1965) or electoral parties (Panebianco 1988). They have a past and they belong to ideological families, which has an impact on their *marge de manœuvre* when it comes to defining their political positions.

And finally, parties, in order to be successful, have to respond to the needs of the electorate, which might also change over time. Here, the questions are: Are voters really clustered around the centre of the political spectrum and do they vote

for parties and candidates having exactly the same political positions as they have (proximity voting)? Or do they vote strategically and opt for candidates with more extreme positions if they are on the same side of a political dimension as they are (directional voting; *see* Rabinowitz and Macdonald 1989)?

Empirical findings so far

The empirical evidence regarding the impact of PR on party extremism is ambiguous. Dow (2001), by analysing the spatial dispersion among parties and candidates in the majoritarian electoral systems in Canada and France and the highly proportional systems in the Netherlands and Israel, finds that parties and candidates in the majoritarian systems are located closer to the centre of the distribution of voters. He comes to the same conclusion nearly a decade later by looking at thirty-one electoral democracies: proportional systems support greater ideological dispersion and party extremism (Dow (2010).

But there are also contrary positions. Curini and Hino (2012) conclude that hypotheses derived from electoral systems and from the number of parties find little empirical support when it comes to explaining party system polarisation. They discuss other variables such as expectations of coalition formation and the role the elections play, for example, in relation to the presidential elections. And Ezrow (2008) finds no evidence at all that average party-policy extremism increases under proportional representation, nor that policy extremism increases in countries that feature large numbers of parties.

Methodological considerations

Although the question to answer seems quite simple and straightforward, there are a few methodological problems to be solved. A first concern is the measurement of the dependent variable. Is it sufficient to analyse party extremism on the left–right dimension or should we rather look at a multidimensional political space (*see* Ezrow 2008: 495)? And how do we establish the political positions of parties and candidates? Do we rely on expert judgments and on party manifestoes, or do we let the parties/candidates position themselves?

Despite the attractiveness of comparative studies on an international level, there are also some problems when it comes to the selection of countries (*see* also, Dow 2010: 360), and there might be important differences as far as the (political) culture is concerned. It is quite often countries with an Anglo-Saxon background which have an electoral system favouring two-party systems. The process of coalition-building or related presidential elections might be additional variables to control for.

And finally, and perhaps more intriguing, is the fact that party competition can change over time. The polarisation of a party system may vary without any changes in the electoral system or a significant increase in the number of parties. This calls for a control of the longitudinal dimension as well.