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# Dimensionality and the number of parties in legislative elections

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## Abstract

This article explores how the party-defined dimensionality of political competition relates to the number of parties competing in legislative elections. It demonstrates that a mathematical relationship between the number of electoral parties and the literature's concept of dimensionality follows from the variables' definitions; conversely, it argues that exploring the relationship between the number of electoral parties and a different concept of dimensionality conveys new information. Hence, it first argues that how we conceptualize dimensionality matters. Redirecting attention to the latter relationship, it then hypothesizes that party system fragmentation will go hand-in-hand with the appearance of new conflicts on the political agenda when the electoral system is permissive. Using a time-series cross-sectional dataset that includes at its core a new measure of dimensionality, it finds reasonable support for the hypotheses; however, at the elite level, new parties are found to play less of a role in politicizing new conflicts than expected.

## Keywords

electoral systems, industrialized democracies, new parties, party fragmentation, party systems

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## Introduction

What is the relationship between the number of political parties competing in legislative elections and the dimensionality of the space that structures political competition? Several scholars have postulated that the former is a function of the latter. For example, Lijphart (1984, 1999) has argued that a positive association exists between the number of parties and what he calls the number of issue dimensions. Others have proposed similar if more complicated hypotheses (e.g. Taagepera, 1999; Taagepera and Grofman, 1985; Taagepera and Shugart, 1989). All have found empirical support for their arguments.

However, a host of both theoretical and empirical issues is raised by this literature. At the theoretical level, confusion has surrounded the literature's conceptualization of dimensionality. Most problematically, the existence of different conceptualizations forces us to confront the prospect that the choice of conceptualization has implications for how the two variables relate. Furthermore, the electoral system is often given only a supporting role to play in the story, a problem that is even more acute in the empirical analyses. This is surprising given the large body of literature linking institutions to the number of parties competing in elections (e.g. Clark and Golder, 2006). At the empirical level, quantitative tests of these hypotheses have for the most part not moved beyond description. For example, standard errors for estimated regression coefficients are provided by neither Taagepera and Grofman (1985) nor Taagepera and Shugart (1989).

This article attempts to speak to these issues. Its first contribution is to make the case that how we conceptualize dimensionality matters – a claim with which few would disagree, but which has received little attention to date in the literature. It offers a three fold schema for conceptualizing dimensionality but focuses upon distinguishing between what we call the raw party-defined dimensionality, the number of conflicts that are salient to parties, and the effective party-defined dimensionality, the number of salient conflicts that are independent once we consider party positions on those conflicts. It then argues that the number of parties and the latter type of dimensionality are linked by a mathematical relationship that follows from their definitions. The second contribution of the article is to redirect attention to the relationship between the number of electoral parties and the former type of dimensionality, a more rewarding research question. It hypothesizes that party system fragmentation will go hand-in-hand with a rise in the number of conflicts on the political agenda only when the electoral system is permissive. It also focuses on what it takes to be the key elite-level mechanism: the formation of new parties, which it hypothesizes is related to the raw dimensionality. Using a time-series cross-sectional dataset of post-war elections in 24 advanced industrial democracies and two measures of raw dimensionality, one of which is introduced here for the first time, empirical support is found for the hypotheses, although the relationship between the number of new parties and the number of salient conflicts is weaker than expected.

The article first briefly reviews the literature. It then turns to conceptual issues and their implications for the relationship between the two variables, including developing hypotheses relating the raw dimensionality to the number of electoral parties. Finally, it empirically tests its hypotheses before concluding.

## The literature

Several scholars have linked the number of political parties in legislative elections to the ‘number of issue dimensions of party systems’ (Lijphart, 1999: 87), a concept that we will henceforth call the ‘dimensionality’. Lijphart (1999: 87), for example, argues that ‘when there are several dimensions of political conflict in a society, one would expect that a relatively large number of parties are needed to express all of these dimensions’, an argument that assumes the political conflicts in society are reflected in the dimensions of the party system (more on this below). Using his own measures of both the number of issue dimensions and the effective number of legislative parties, he finds strong empirical support for the hypothesized positive relationship (see also Lijphart, 1984). Some have suggested more specific functional forms. For example, Taagepera and Grofman (1985) and Taagepera and Shugart (1989) both famously hypothesize that the number of parties equals the number of issue dimensions plus one, that is:

$$N = I + 1, \quad (1)$$

where  $N$  is the number of parties and  $I$  is the number of issue dimensions. Using Lijphart’s earlier (1984) data, these two studies estimate regression models and also find reasonable support for their hypothesis.

One study has additionally incorporated political institutions in its account. By doing so, it draws upon the long line of research extending from Duverger (1963) to Clark and Golder (2006) that has found political institutions – particularly the restrictiveness of the electoral system – to be an important determinant of the number of parties. Specifically, Taagepera (1999) argues for the relationship:

$$N = I^{0.6}M^{0.15} + 1, \quad (2)$$

where  $N$  and  $I$  are as before and  $M$  is the effective district magnitude. Also using Lijphart’s earlier (1984) data, he subjects his partially institutional hypothesis to empirical analysis and finds that it fares well. We note that while Taagepera and Grofman (1985) hypothesize that there is an interactive relationship between the number of parties, the number of issue dimensions and electoral system restrictiveness, their penultimate story is a non-institutional one, as reflected by Equation 1. Moreover, political institutional variables do not appear in their formal empirical analysis.

Two issues are raised by this literature. The first concerns the conceptualization of the key independent and dependent variables, the number of parties and the dimensionality. The second concerns the relationship between these variables. We begin with the former because it has ramifications for the latter, as we argue below.

## Conceptualizing the variables

Our initial task is to interrogate the literature’s conceptualizations of the number of parties and the dimensionality.

We begin with a minor conceptual issue surrounding the dependent variable: should our focus be on the number of parties competing in legislative elections or on the number

of parties actually winning seats in the legislature? The former is often called the number of *electoral* parties and the latter the number of *legislative* (or *parliamentary*) parties. All of the studies that use dimensionality as an explanatory variable have at least implicitly (via their measures) defined the dependent variable as the number of legislative parties. However, because the number of legislative parties is produced by the electoral system's translation of votes into seats, putting variables other than the electoral system and the number of electoral parties on the right-hand side risks biased and inconsistent coefficient estimates (Benoit, 2002). Given our interest in a non-institutional right-hand-side variable, dimensionality, we therefore define the dependent variable to be the number of electoral parties in what follows.

The second and more difficult conceptual issue is how to define the independent variable of dimensionality. Below, we identify three definitional parameters that add much-needed concreteness. The first two seek to overcome confusing terminology to clarify which concept the literature, and hence this article, explores. The third parameter is the most important because of its implications for the relationship between the two variables, despite the little attention that it has received.

The first of these definitional parameters asks to whom conflicts or dimensions are salient: to political parties or to voters? A conflict that is salient to parties is one that appears on the *party-defined* political agenda. Over the course of a campaign, parties compete with one another by staking out positions on these conflicts in a variety of venues, from election platforms (manifestos) to speeches by party leaders. Combined, this set of salient conflicts or *space* is what parties say politics is about. However, there is no guarantee that parties and voters are 'in the same space', and in fact they are likely not to be (Budge et al., 1987: 393): only when we allow the party-defined and voter-defined spaces to differ do we do justice to the notion of parties as strategic actors (e.g. Riker, 1986).<sup>1</sup>

Of these two conceptualizations, it is the *party-defined* dimensionality that the literature has sought to relate to the number of parties. To illustrate, Taagepera (1999: 531) uses the term 'socio-political heterogeneity' (emphasis added) to refer to his independent variable, which he defines as the 'number of social cleavages that are politicized'. Further favouring this interpretation are statements like 'politicized issues mean issues on which some *parties* disagree' (1999: 545; emphasis added).<sup>2</sup> Lijphart himself is less clear about whether his interest is in the voter- or party-defined space. However, a suggestion that his dimensionality is party-defined can be found in his statement that 'the focus should be on the differences between . . . parties', as well as in his argument that official party platforms, other formal party pronouncements and the actual policies pursued when a party is in power all aid in identifying the 'issue dimensions of party systems' (Lijphart, 1999: 78).

The second definitional parameter is the level of aggregation of the potentially salient conflicts. At the highly aggregated extreme, one can study *ideological* conflicts: latent conflicts that subsume a large number of substantive policy issues. An example is Downs (1957), who related the ideological conflict about the proportion of economic activity left to the private sector to policy issues from healthcare provision to the level of taxation. At the other extreme, we can borrow from the classical spatial model and study the specific *issues* themselves (Hinich and Munger, 1997). While one can quibble about

exactly how aggregated any given set of conflicts is, we can distinguish between conceptualizations that aim for a high level of aggregation, which we label 'ideological', and those that aim for a low level of aggregation, which we label 'issue'. However, these are differences in degree rather than differences in kind. We will delve deeper into this parameter and its relationship to the third parameter below. For now, we note that it draws attention to a fundamental problem with any measure of dimensionality, and indeed with the concept of 'dimensionality' itself: it is conditional upon our starting point, that is, upon the set of conflicts that we consider potentially salient – and hence upon our working model of politics (e.g. Laver and Hunt, 1992).

While the literature's scholars usually claim to be studying the number of issue dimensions, it is clear from existing measures such as Lijphart's (1984, 1999) that the dimensionality studied is actually highly aggregated in nature. For example, the seven conflicts that Lijphart considers potentially salient are the religious; socio-economic; ethnic; urban-rural; foreign policy; post-materialist; and regime support. Of course, we could construct an even more aggregated set of conflicts than Lijphart's (for example, the socio-economic and 'everything else'), as well as one that is slightly less aggregated. The point is simply that the literature follows a long-standing tradition in comparative politics of studying highly aggregated or ideological conflicts, despite its nomenclature.<sup>3</sup>

For the third and final definitional parameter, we must distinguish between the space defined by the set of conflicts that is salient to political parties and the positions that parties take within this space. The first conceptualization pays no attention to parties' positions: dimensionality is simply the number of salient conflicts. We henceforth refer to this type of dimensionality as the *raw* dimensionality.<sup>4</sup> However, the second conceptualization does take party positions into account. Dimensionality is the number of salient conflicts that are linearly independent given party positions on those conflicts, where two conflicts are independent or orthogonal if parties' positions on one cannot be predicted using their positions on the other. We call this version of the concept the *effective* dimensionality because we can think of dimensions being weighed by their correlation when counting, akin to weighing them by their salience. Two observations follow. First, the effective dimensionality will always be less than or equal to the raw dimensionality. Second, the effective dimensionality will view the space as one-dimensional whenever only two parties compete because two points in any real valued,  $m$ -dimensional space ( $R^m$ ) always live on a line.

An example may help to illustrate how the two conceptualizations differ. Suppose an empirical analysis reveals both religion and socio-economics to be salient ideological dimensions of competition to the four political parties that compete in an election. In this case, the party-defined ideological space can be envisioned as the Cartesian plane, with one conflict – say, religion – serving as the horizontal axis and the other conflict – say, socio-economics – serving as the vertical axis. Suppose further that the four parties all take up positions along the line passing through the points (0, 0) and (1, 1) in the plane. The effective dimensionality views this ideological space as one-dimensional because parties' positions on the religious conflict are strongly (in fact, perfectly) related to their positions on the socio-economic conflict, and vice versa. However, the raw dimensionality views this space as two-dimensional because two conflicts are salient, even though parties' positions on one conflict relate to their positions on the other.

The literature's stance on this parameter is unclear, but we judge it implicitly led to the effective dimensionality by its choice of measure, that of Lijphart (1984, 1999). This measure consists of Lijphart using his own expert judgement to code the average salience of seven ideological conflicts (see above) over the post-war period on a scale ranging from 0 to 1, the sum of which is the ideological dimensionality. While Lijphart does not spell out which type of dimensionality he seeks to measure, a clue as to his intention is that he codes most two-party systems to possess between one and one-and-a-half salient dimensions. As argued above, this suggests that it is the effective instead of the raw dimensionality that is being measured.<sup>5</sup> Other scholars who have built upon Lijphart's work share this interpretation. For example, Nagel (1994: 146) applies what he takes to be Lijphart's procedure to New Zealand and only counts dimensions if they 'exist reasonably independent of (orthogonal to) other[s]'.

Combining the second and third definitional parameters, we have four different versions of the concept of party-defined dimensionality: the raw issue; the raw ideological; the effective issue; and the effective ideological. Yet the boundaries of this typology are not hard and fast, as we earlier noted with respect to the second definitional parameter. To illustrate, an ideological dimension bundles together a set of issue dimensions, presumably because party positions on those issues have tended to go together. But how can we then speak of an ideological dimensionality that is raw? Does not the bundling together of issue into ideological dimensions invoke the effective conceptualization? The answer is that the raw ideological dimensionality seeks to collect issues into bundles such that within the bundles issues have tended to go together, but between the bundles they have at least sometimes not, that is, such that the relationship between the bundles is an empirical question. An example is the bundle of religious (church-state) issues on the one hand, and the bundle of socio-economic issues on the other. However, if we push too hard at this bundling, we will end up with the effective ideological dimensionality. We accordingly reiterate that we speak of differences in degree rather than kind, although we believe it is generally both theoretically and practically possible to distinguish between the different conceptualizations. The exception is the effective issue dimensionality, which reduces to the effective ideological dimensionality. Indeed, there are no existing measures of this version of the concept, although measures do exist of the other three versions.

To show that these different conceptualizations do yield different real-world portraits of the 'stuff' of political competition, we relate four quantitative measures of dimensionality to the three distinct conceptualizations. The first is the previously discussed measure of effective ideological dimensionality of Lijphart (1981, 1984, 1999). Working in another literature, Nyblade (2004) has constructed time-series cross-sectional measures of both the raw issue dimensionality and the effective ideological dimensionality: his effective number of issues (ENI) and effective number of issue dimensions (ENID), respectively. In contrast to Lijphart's measure, these measures capture temporal as well as cross-sectional variation; furthermore, they are based upon the Comparative Manifesto Project's (CMP's) content analysis of political parties' election manifestos (Budge et al., 2001) instead of upon expert judgements.<sup>6</sup> To elaborate, Nyblade's measure of raw issue dimensionality weighs all available issues, which are a slightly modified version of the CMP's original coding categories, by their salience; the actual

**Table 1.** The average (post-World War II) party-defined dimensionality of political competition using four measures, all rounded to two significant digits. NA indicates the unavailability of a measure

Country	Raw issue (Nyblade)	Raw ideological	Effective ideological (Nyblade)	Effective ideological (Lijphart)
Australia	NA	1.4	NA	1.5
Austria	17	1.5	2.7	1.5
Belgium	21	2.0	2.9	3.0
Canada	NA	1.4	NA	1.5
Denmark	16	1.3	2.7	2.5
Finland	14	1.3	3.0	3.5
France	24	1.7	3.1	2.5
Germany	18	1.6	2.8	3.0
Greece	17	1.5	3.0	1.5
Iceland	15	1.2	3.0	2.0
Ireland	15	1.3	2.8	1.5
Israel	NA	2.2	NA	3.0
Italy	19	1.4	2.9	3.0
Japan	NA	1.5	NA	2.5
Luxembourg	17	1.5	2.7	2.0
Netherlands	22	1.6	2.8	3.0
New Zealand	NA	1.3	NA	1.0
Norway	21	1.5	2.7	3.0
Portugal	16	1.3	3.0	2.5
Spain	21	1.5	2.8	2.5
Sweden	13	1.2	2.4	2.5
Switzerland	NA	1.7	NA	3.0
United Kingdom	23	1.5	3.0	1.5
United States	NA	2.3	NA	1.0

weighing is performed by the well-known effective number statistic of Laakso and Taa-gepera (1979). His measure of effective ideological dimensionality then reduces the raw issue dimensionality by any correlation (specifically, similarity in terms of angular separation scores) between the salience of the various issues to the parties. Hence, raw dimensions are collapsed into effective dimensions.<sup>7</sup> Finally, in this article, we introduce a new time-series cross-sectional measure of raw ideological dimensionality drawing upon our earlier work that is also based on the CMP (discussed below).

Table 1 contains the average values of the four measures for each of the 24 advanced industrial democracies included in the CMP. For the three time-series cross-sectional measures, the average is taken over the post-war period. As expected, all measures of the ideological dimensionality identify a lower-dimensional space than does the measure of the issue dimensionality. Also as expected, the Pearson's correlation coefficient between our measure of raw ideological dimensionality and Nyblade's (2004) measure of effective ideological dimensionality is low (0.086), as is the correlation between our averaged measure and Lijphart's (1999) measure of effective ideological dimensionality (0.092); conversely, the correlation between the two measures of the raw dimensionality



(our ideological and Nyblade's issue) is much higher (0.28). Surprisingly, the correlation between the two measures of effective ideological dimensionality (averaging Nyblade's) is also low (-0.073). Of particular note are the very different pictures of two-party systems like that of the United States painted by our measure of the raw ideological dimensionality and Lijphart's measure of the effective ideological dimensionality.

## Hypotheses

We now return to the research question motivating this article. In the remainder of the article, we take it as understood that we follow the literature in conceptualizing dimensionality as party-defined and ideological. Unlike the literature, however, we allow the third definitional parameter to vary: specifically, we ask how the number of electoral parties relates to both the effective and the raw dimensionality, in that order.

First, the effective dimensionality. There is a mathematical relationship between this variable and the number of electoral parties, reflected in our prior claim that any two points in  $\mathbb{R}^m$  always live on a line. Simply put, the effective dimensionality will always be no more than the number of electoral parties minus 1: if there are two parties competing in an election, there can only be one effective dimension; if there are three parties, there can either be one or two effective dimensions; if there are four parties, there can either be one, two or three effective dimensions, and so on. More formally:

$$I \leq N - 1, \quad (3)$$

where  $I$  is the effective dimensionality and  $N$  is the number of parties. To elaborate, by definition, the effective dimensionality is the dimensionality of the parties' positions on the set of salient conflicts. If parties' positions are represented by points in the  $m$ -dimensional space formed by these salient dimensions ( $\mathbb{R}^m$ ), we can think of this dimensionality as the dimension of the space spanned by the vectors between these points. Linear algebra tells us that with  $N$  parties, there are at most  $N-1$  independent vectors. As a result, the effective dimensionality will be at most  $N-1$  (provided that the number of salient dimensions is at least  $N-1$ ).

From a different starting point, we have accordingly arrived at a variant of the relationship claimed by Taagepera and Grofman (1985) and captured by Equation 1. However, contrary to these scholars, we have just argued that the effective dimensionality and the number of electoral parties *are* 'rigidly interconnected' by definition (Taagepera and Grofman, 1985: 349), even if the relationship is not deterministic within the bounds of Equation 3. This means that it is not surprising that numerous scholars such as Lijphart (1999) have found a strong relationship between measures of the number of parties and the effective dimensionality. However, this finding conveys no new information of interest to us as political scientists because much of the relationship is mechanically accounted for by definitional fiat. It is for this reason that the remainder of the article focuses upon the raw dimensionality and its relationship with the number of electoral parties: empirical findings about this relationship do convey new information, as discussed below.

This brings us to the raw dimensionality. There is no necessary, mathematical relationship between this variable and the number of electoral parties that follows from the variables' definitions: one, two or 10 conflicts can be salient to one, two or 10 parties. To illustrate, consider the United States on the one hand, and Israel on the other. In the former, multiple conflicts ranging from socio-economics to foreign policy to race have been salient at any one time but there have been only two political parties, contrary to Lijphart's (1999: 87) claims. In the latter, multiple conflicts have similarly been salient, but there have conversely been many political parties (e.g. Stoll, 2004).

But might there be a probabilistic relationship between these variables? Consider the literature's operationalization of the number of electoral parties: the effective number of electoral parties (Laakso and Taagepera, 1979). This measure captures electoral coordination at both the elite and mass levels by weighing each competing party by its vote-share when counting parties.<sup>8</sup> How can the party system fragment and hence this measure of the number of electoral parties increase? The answer is in two ways: by new parties entering the race and receiving some support from voters, or by previously relatively marginal parties receiving support from voters at the expense of previous winners (i.e. by voters increasing the dispersion of their votes over the same existing set of parties). This means that to the extent either new parties or previously marginal but existing parties put new conflicts on the political agenda, and to the extent voters reward them for doing so, an increase in the number of salient conflicts (i.e. in the raw dimensionality) will be associated with party system fragmentation (i.e. an increase in the effective number of electoral parties). Hence, in the spirit of the literature, we offer the following hypothesis:

*Hypothesis 1 (H1):* The effective number of electoral parties is positively associated with an increase in the raw dimensionality.

As it stands, however, this hypothesis is unsatisfying: what is the mechanism that underlies it? To explore this mechanism, consider two questions: first, which types of parties attempt to expand the political agenda and, second, how do voters respond to their efforts? We first turn to the elite level and to new parties. The formation of new parties to introduce new conflicts is an obvious way by which the number of electoral parties will increase along with the number of salient dimensions. Our reading of the literature is that it has implicitly focused on this elite-level mechanism, even though the success of these parties, and hence what happens to the effective number of parties, depends upon voters. Moreover, scholars of new parties, such as Harmel and Robertson (1985) and Hug (2001), have in fact argued that one factor responsible for both new party formation and success is the emergence of new issues within society. New parties take up these new social issues either anticipating voter support and electoral success (the 'contender' parties of Harmel and Robertson) or with the goal of influencing other parties (their 'protest' or 'promoter' parties). These scholars, in other words, paint new parties as prominent forces behind the expansion of the political agenda, although we note that the empirical testing of their arguments has been hampered by poor measures of new issues (Tavits, 2006).<sup>9</sup>

Yet competing mechanisms do exist, as suggested above: new parties are not the only parties that can put new conflicts on the political agenda. One competing mechanism is

that existing parties with relatively marginal vote-shares politicize new conflicts that have become salient within society (see, for example, Cantillon, 2001). If the goal of these parties is to better their electoral fortunes at the expense of current winners, this is nothing other than the ‘heresthetics’ of Riker (1986): an underdog’s attempt to break up a winning coalition by changing the structure of the debate. Another mechanism is that winning parties themselves serve as the agents of change: that they seek to pre-empt the entry of new competitors and to preserve (or strengthen) their advantage vis-à-vis existing competitors by themselves introducing new conflicts.<sup>10</sup> Accordingly, the extent to which new parties drive change in the political agenda relative to existing parties, and the extent to which marginal existing parties drive change relative to winning existing parties, depends upon the strategic choices of *both* political entrepreneurs and the political elites of existing parties. In turn, these choices are a function of many other institutional and cultural factors.

One explanatory factor that may help to explain the roles played by these three types of parties is the restrictiveness of the electoral system. It is well known that restrictive electoral systems, among other arguably less important institutional factors such as the cost of registering a party, impose high barriers to the entry of new parties (see, for example, Tavits, 2006). That is, anticipating strategic voting, political entrepreneurial elites will engage in strategic entry when the electoral system is restrictive. This suggests that permissive electoral systems will provide a better opportunity for new parties to form in an attempt to shape the political agenda, with the number of new conflicts increasing with the number of new parties. We thus have the following hypothesis:

*Hypothesis 2 (H2):* Only for sufficiently permissive electoral systems will new party formation (i.e. the number of new parties) be positively associated with the raw dimensionality.

However, to the extent that new parties are not motivated to achieve electoral success (i.e. are protest parties), they may enter the race in an attempt to shape the political agenda even when the electoral system is restrictive. One might accordingly argue contrary to H2 that there should be a positive association between the raw dimensionality and the number of new parties in *both* types of electoral system – providing the literature is correct that a key reason new parties form is to politicize new social issues.

Finally, because voters are less likely to vote strategically when the electoral system is permissive, previously marginal existing parties may be more likely to introduce new conflicts with an eye to reaping electoral dividends under this type of electoral system. Combining the prior elite-level arguments with the mass-level argument that voters are more likely to reward both new and existing marginal parties for their issue entrepreneurship when the electoral system is permissive, we arrive at the following modification of H1:

*Hypothesis 3 (H3):* The effective number of electoral parties will be more strongly related to the raw dimensionality when the electoral system is permissive than when it is restrictive.

One caveat is in order. While causality is conventionally taken to imply a clear time ordering of the effects, it is not obvious that a change in the ‘independent’ variable of raw

dimensionality will always temporally precede a change in the 'dependent' variable of the number of electoral parties. For example, it may sometimes be the case that a new party comprised of office-seeking entrepreneurial elites enters the race and then goes in search of a new conflict to justify its existence, which would reverse the direction of the causal arrow; it may also sometimes be the case that elites simultaneously decide to form a new party and to introduce a new dimension of conflict. Hence, we can hypothesize about and empirically test for an association between these variables; however, because we cannot claim that one of them is temporally prior to the other, the hypothesized relationships are not causal in a conventional sense. This makes our designation of the number of electoral parties as the dependent variable and the raw dimensionality as the independent variable fundamentally arbitrary, even though it follows the literature.

We close with a brief example that may help to illustrate why we believe the more rewarding research question is the one relating the raw dimensionality to the number of electoral parties. The United States has had a two-party system in its legislative elections since approximately the 1920s (e.g. Chhibber and Kollman, 2004). By definition, this means that the effective dimensionality is one from the 1920s onwards. Combining this effective dimensionality with the number of electoral parties, we paint a very static portrait of political competition in the United States: no new (third) parties and no new (independent) conflicts. Yet several prominent studies paint a more dynamic picture. For example, some identify a racial conflict that emerged in the 1930s, peaked in the 1960s and then faded away (e.g. Carmines and Stimson, 1989), a significant change in the political agenda. Unlike the effective dimensionality, the raw dimensionality changes over this period to reflect the changing salience of racial issues. In fact, the latter points us towards one of the enduring features of political competition in the United States for the past 100 years: while the political agenda has changed, that change has been driven by the two major existing parties, not by new, third parties. The United States' restrictive electoral system is one of the likely culprits.<sup>11</sup> Hence, the effective dimensionality obscures the very dynamics that the literature is interested in exploring.

## Empirical analysis

We now turn to an empirical analysis of the hypotheses regarding the relationship between the raw dimensionality and the number of electoral parties. Is party system fractionalization associated with an increase in the number of salient conflicts? And, more specifically, does the formation of new parties relate to the appearance of new conflicts on the political agenda, at least in permissive electoral systems?

## Measures

We employ two operationalizations of the dependent variable. The first is the previously described effective number of electoral parties (Laakso and Taagepera, 1979).<sup>12</sup> The second is the number of new parties.<sup>13</sup> We take data for the former from Golder (2005) and for the latter from Tavits (2006), who expanded the dataset originally compiled by Hug (2001). Combined, these two operationalizations allow us to distinguish

between the two mechanisms by which the fragmentation of the party system can be associated with an increase in the raw dimensionality: the entry of new parties and agenda-setting by previously existing but marginal parties.

As noted above, our operationalization of raw ideological dimensionality, the independent variable, is a new measure introduced here for the first time.<sup>14</sup> Also as discussed above, this new measure captures temporal as well as cross-sectional variation by making use of the CMP, the only source of data on party-defined issue salience for a large number of countries and time periods.<sup>15</sup> At the core of the measure lies the calculation of the salience of seven ideological conflicts: the socio-economic; religious; ethnic; urban-rural; foreign policy; post-materialist; and democratic-authoritarian. While this set of conflicts, like any, is of necessity somewhat arbitrary, it closely resembles the set of highly aggregated conflicts at the core of Lijphart's (1984, 1999) measure, which in turn draws upon other influential literatures in comparative politics. The first step in constructing the measure is to associate each CMP coding category with one of these seven conflicts. The second step is to calculate the salience of each conflict for each country and election, which is defined to be the average proportion of competing and politically significant (as defined by the CMP) parties' manifestos that are devoted to the conflict. This is a direct extension of the CMP's procedure for calculating the salience of specific policy issues (coding categories) to individual parties. Third, and finally, the raw dimensionality in a given election is calculated by weighting each conflict by its estimated salience using the procedure developed by Molinar (1991), which is a modified version of the effective number. (The effective number itself tends to over-count the most salient conflict.) More detailed information is provided in Appendix 1.

We briefly elaborate upon the real-world portraits painted by this measure. Recall that Table 1 contains the averaged values of raw ideological dimensionality for the countries appearing in the empirical analysis. Where parties devote the bulk of their manifestos to one of the seven conflicts, this measure will view the raw space as unidimensional. Examples of countries that have experienced this type of political competition are Finland and Sweden. By way of contrast, where either most parties split their manifestos between two conflicts or roughly half devote their manifestos to one conflict and the other half to another conflict, either of which indicates that two conflicts are collectively salient to the competing parties, the raw space will be measured as two-dimensional. Examples of countries with this type of political competition include Israel and the United States.

Finally, because the distinction between the raw issue and raw ideological dimensionality is somewhat arbitrary, as discussed earlier, we also use Nyblade's (2004) measure of the raw issue dimensionality. This allows us to assess the sensitivity of our results to the measure of raw dimensionality that we employ. However, our preference is for the raw ideological dimensionality because it aims to capture fundamental, large-scale differences in the party-defined political agenda across space and time – on par with the focus of our ostensible dependent variable (the effective number of electoral parties) on the fundamental, large-scale differences in legislative electoral coordination.

Our remaining task is to operationalize the independent variable of electoral system restrictiveness. To do so, we employ a dummy variable for elections conducted under a majoritarian (i.e. a restrictive) electoral system: the latter are coded '1', while elections

conducted under a non-majoritarian (i.e. a permissive) electoral system are coded '0'.<sup>16</sup> We also take data on this variable from Golder (2005).

### Model specifications and data

To test H1, we estimate the following simple and fully pooled<sup>17</sup> model:

$$\text{ENEP}_{i,t} = \beta_0 + \beta_1 \text{DIM}_{i,t} + \varepsilon_{i,t} \quad (4)$$

In this equation, 'ENEP' represents the effective number of electoral parties in legislative elections and 'DIM' the raw dimensionality. This model's time-series cross-sectional nature is conveyed by the indices:  $i$  indexes countries and  $t$  elections. It essentially replicates the empirical analyses of scholars such as Taagepera and Grofman (1985) and Lijphart (1999), albeit using different concepts and measures of the variables. We estimate two versions of this model, one for each measure of raw dimensionality. Model 1 employs our measure of the raw ideological dimensionality, while Model 2 instead employs Nyblade's (2004) measure of raw issue dimensionality.

Our cases for estimating these models consist of all national legislative elections in advanced industrial democracies that are included in the CMP.<sup>18</sup> A list of these countries and elections can be found in Appendix 2; to summarize, we study post-war elections in 24 advanced industrial democracies.<sup>19</sup> Between seven and 22 (on average, 14) elections are observed per country for a total of 346 legislative elections. The structure of the dataset is accordingly extremely non-rectangular and somewhere between time-series cross-sectional and panel (Beck and Katz, 1995). However, Nyblade's (2004) measure is only available for 17 of the countries that we analyse: specifically, for some of the West European countries (see Table 1).

To test H3, we modify Equation 4 to include an interaction term between the dummy variable for majoritarian electoral systems ('MAJ') and the raw dimensionality:

$$\text{ENEP}_{i,t} = \beta_0 + \beta_1 \text{DIM}_{i,t} \beta_2 \text{MAJ}_{i,t} + \beta_3 \text{DIM} \times \text{MAJ}_{i,t} + \varepsilon_{i,t}. \quad (5)$$

All other variables are as before. We use the same set of cases described above to estimate two versions of this model: that using our measure of the raw ideological dimensionality, which we label Model 3, and that using Nyblade's measure of the raw issue dimensionality, which we label Model 4.

Finally, to test H2, we would like to substitute the number of new parties for the effective number of electoral parties on the left-hand side of Equation 5. However, the former is a count variable, and, as such, estimating such a model would require the use of more sophisticated methods. In light of our earlier argument that the designation of one variable as 'independent' and the other as 'dependent' is essentially arbitrary, with Equation 5 merely following the literature, we simplify the discussion of the results that follows by putting the number of new parties on the right-hand side and the raw dimensionality on the left-hand side.<sup>20</sup> This yields the following model:

$$\text{DIM}_{i,t} = \beta_0 + \beta_1 \text{NEWPARTIES}_{i,t} \beta_2 \text{MAJ}_{i,t} + \beta_3 \text{NEWPARTIES} \times \text{MAJ}_{i,t} + \varepsilon_i \quad (6)$$

where 'NEWPARTIES' represents the number of new parties and all other variables are

**Table 2.** The estimated OLS coefficients for models 1–6; Newey–West robust standard errors appear in parentheses. The dependent variable for Models 1–4 is the effective number of electoral parties, while the dependent variable for Models 5 and 6 is the raw dimensionality. Significance codes are for two-sided tests, all calculated prior to rounding to two significant digits: 0.01\*\*\*, 0.05\*\*, 0.10\*

Model	Effective number of electoral parties				Raw dimensionality	
	1	2	3	4	5	6
Dimensionality	Raw ideology	Raw issue	Raw ideology	Raw issue	Raw ideology	Raw issue
Intercept	2.9*** (0.30)	3.2*** (0.33)	2.6*** (0.29)	2.9*** (0.38)	1.5*** (0.036)	17*** (0.043)
Raw dimensionality	0.65*** (0.22)	0.049*** (0.019)	1.2*** (0.20)	0.076*** (0.023)		
Majoritarian			0.81*** (0.41)	–2.3 (1.7)	–0.016 (0.061)	7.4*** (1.2)
Raw dimensionality × Majoritarian			–1.4*** (0.28)	0.050 (0.070)		
New parties					0.0071 (0.013)	0.40** (0.17)
New parties × Majoritarian					–0.013 (0.017)	–0.076 (0.27)
N	347	237	347	237	217	171
Root MSE	1.4	1.3	1.2	1.3	0.35	4.0
R <sup>2</sup>	0.037	0.030	0.27	0.077	0.0031	0.28

as before. We again estimate two versions of this model, one for the raw ideological dimensionality and one for the raw issue dimensionality. These models are labelled Models 5 and 6, respectively.

The cases used to estimate these models are generally as described above. The few differences are due to the availability of the data on the number of new parties. First, these data are only available beginning with the first election after 1959, resulting in a shorter time series for each country. Second, the United States is eliminated from Model 5 in the interest of consistency because its new parties data are taken from the presidential, not the legislative, race; however, we note that including it does not substantively affect the results. Third, data are not available for either Israel or Japan, or for 10 elections in other countries. The resulting dataset consists of a total of 217 observations on 21 advanced industrial democracies, although, as before, data on the measure of raw issue dimensionality are not available for all of these cases (see Appendix 2 for more information).

## Results and discussion

We use OLS regression to estimate Models 1–6. The resulting coefficient estimates are given in Table 2. While contemporaneous correlation of the errors is not a concern for the models given the data and research question,<sup>21</sup> heteroskedasticity and serial correlation might render OLS standard errors biased and inconsistent. Indeed, Breusch–Pagan

**Table 3.** The estimated marginal effect for permissive (non-majoritarian) and restrictive (majoritarian) electoral systems. For Models 3 and 4, this is the marginal effect of raw dimensionality on the effective number of electoral parties; For Models 5 and 6, it is the marginal effect of the number of new parties on the raw dimensionality. Ninety-five percent two-sided confidence intervals appear in brackets

Model	Dimensionality	Type of electoral system	
		Permissive	Restrictive
3	Raw ideological	1.2 [0.75, 1.6]	-0.25 [-0.64, 0.14]
4	Raw issue	0.076 [0.030, 0.12]	0.13 [-0.0038, 0.25]
5	Raw ideological	0.0071 [-0.018, 0.032]	-0.0059 [-0.028, 0.017]
6	Raw issue	0.40 [0.070, 0.74]	0.33 [-0.082, 0.74]

tests identify the presence of heteroskedasticity in most models and simple regressions of the residuals on their lags reveal autocorrelation. Accordingly, the most appropriate robust standard errors are the Newey–West (Newey and West, 1987), which appear in Table 2 in parentheses.<sup>22</sup>

We begin with H1. Table 2 reveals a positive and statistically significant association between the effective number of electoral parties and the raw dimensionality (Models 1 and 2). Party system fragmentation does appear to accompany a rise in the number of salient dimensions of political competition, regardless of which measure of the raw dimensionality we employ as our measure. Hence, we find empirical support for H1, the hypothesis that embodies the general spirit of the literature's arguments.

This brings us to H2 and H3, which posited that electoral system restrictiveness conditioned the relationship between the number of electoral parties and the raw dimensionality. As shown by Table 2, the interaction term between the dummy variable for majoritarianism and either the raw dimensionality or the number of new parties is only statistically significant in Model 4, where the dependent variable is the effective number of electoral parties and the independent variable is our measure of raw ideological dimensionality. There is accordingly some support for the conditionality of this relationship (H3), if not for the conditionality of the relationship between the raw dimensionality and the number of new parties (H2). However, Table 2 does not allow us to fully test these hypotheses. What is needed are the marginal effects of dimensionality and the number of new parties, respectively. Table 3 displays these predicted marginal effects for both permissive and restrictive electoral systems for each of the interaction models. For Models 3 and 4, these marginal effects are the partial derivative of Equation 5 with respect to dimensionality (Brambor et al., 2005); for Models 5 and 6, they are the partial derivative of Equation 6 with respect to the number of new parties.<sup>23</sup> Two-sided, 95 percent confidence intervals for the effects are shown in brackets.



We first discuss the findings pertaining to the relationship between the effective number of electoral parties and the raw dimensionality (H3). When the electoral system is permissive, Table 3 shows that an increase in the number of salient dimensions is always associated with a statistically significant increase in the effective number of electoral parties (Models 3 and 4). Moreover, for the raw ideological dimensionality (Model 3), the magnitude of the effect is substantively significant: the appearance of a new ideological dimension is predicted to be accompanied by the appearance of approximately one additional effective electoral party, that is, by substantial fragmentation of the party system. Conversely, when the electoral system is restrictive, the marginal effect is never statistically significant and the sign varies with the measure. Hence, party system fragmentation is more likely to accompany the appearance of new conflicts on the political agenda when the electoral system is permissive than when it is restrictive. As hypothesized, under permissive electoral systems, either existing marginal parties or new parties put new conflicts on the political agenda and are rewarded by voters for doing so; however, under restrictive electoral systems, either new parties and existing marginal parties do not engage in issue entrepreneurship, or they do but voters do not reward them for it.

These findings beg the question of what is happening at the elite level with new parties. Last, but not least, we accordingly turn to our findings about H2. In Table 3, we see a positive association between the raw dimensionality and the number of new parties when the electoral system is permissive (Models 5 and 6). However, the association is only statistically significant when using Nyblade's (2004) measure of raw issue dimensionality (Model 6), and even its substantive significance is not overwhelming: a new salient issue dimension is predicted to go hand-in-hand with less than half (two-fifths) of a new party. By way of contrast, the association is never statistically significant when the electoral system is restrictive, although it comes close for the raw issue dimensionality, and the sign again varies with the measure. Hence, the political agenda is more likely to expand when new parties enter the race under permissive than under restrictive electoral systems, as hypothesized. Yet the evidence is on the weak side, particularly given that our conclusions about this hypothesis are somewhat sensitive to our modelling choices. The fact that we obtain stronger findings using Nyblade's measure might be explained by new parties' tendency to focus on single (or small sets of) issues (e.g. Meguid, 2005), which the raw issue dimensionality is better poised to detect than the raw ideological dimensionality.

## Conclusion

This article both theoretically and empirically explored the relationship between the party-defined dimensionality of political competition in advanced industrial democracies and the number of electoral parties that compete in legislative elections.

We began by arguing that how we conceptualize dimensionality has important implications for its relationship with the number of electoral parties, and we offered a three fold schema for doing so. Most importantly, we distinguished between what we called the raw and the effective party-defined dimensionality, where the former simply counts the number of conflicts or dimensions that are salient to political parties and the latter counts only those salient conflicts that are independent once party positions are

taken into account. We then argued contrary to the literature that there is a mathematical relationship between the effective dimensionality and the number of electoral parties: the effective dimensionality must always be less than or equal to the number of electoral parties minus 1. This makes it unsurprising that the literature has found a strong relationship between the number of electoral parties and Lijphart's (1984, 1999) measure of dimensionality, which is a measure of the *effective* dimensionality. However, such a finding does not convey any new information of interest because it primarily confirms the mathematical relationship that follows from the variables' definitions. Moreover, within these deterministic bounds, exploring this relationship involves theorizing simultaneously about party positions and conflict salience – a difficult task (e.g. Laver and Hunt, 1992).

Instead, we proposed focusing upon the relationship between the raw dimensionality and the number of electoral parties. In keeping with the spirit of the literature, we hypothesized that a rise in the number of salient conflicts would go hand-in-hand with party system fragmentation. To flesh out the mechanism, we additionally hypothesized that the electoral system would condition both elite and voter behaviour and hence the relationship between these variables. We found reasonable support for the hypotheses using a dataset of post-war elections in advanced industrial democracies and two measures of the raw dimensionality: our own new measure of raw ideological dimensionality and an existing measure of raw issue dimensionality from Nyblade (2004), both drawing from the Comparative Manifestos Project. Specifically, combining the elite and mass levels, the effective number of electoral parties was positively and significantly related to the raw dimensionality only when the electoral system was permissive, as hypothesized. Hence, under permissive electoral systems, new and existing but marginal parties are rewarded by voters for putting new conflicts on the political agenda, but under restrictive electoral systems they are not – leaving existing winning parties in the driver's seat. Focusing more narrowly on the elite level and new party formation, we found some support for the well-known hypothesis that the number of new parties is positively related to the number of salient conflicts. But the weakness of these results, combined with the strength of the prior results, suggests that new parties do not play as large a role in politicizing new issues as the literature predicts, even when the electoral system is permissive.

Our findings are the most rigorous analysis of this research question to date. However, much work remains to be done. For one, our weak findings regarding the relationship between the number of new parties and the number of salient conflicts might result from new parties playing a larger role in introducing new positions on existing conflicts than new conflicts themselves, as Harmel and Robertson's (1985) data through 1980 in fact suggest. This is a topic to which the new parties literature should return. For another, they might be an artefact of our measures: the Comparative Manifestos Project does not include many electorally unsuccessful new parties, and its coding categories by design will not be able to accommodate completely new issues. Currently, ongoing data-generation projects that move beyond eliciting elite-level dimensionality from manifestos, such as the political rhetoric project of Monroe and Maeda (2004), should help scholars to address measurement issues like these. Yet any quantitative coding scheme applied over a long time period will encounter the latter problem, which suggests supplementing quantitative analyses like ours with qualitative ones. One possibility is smaller-*N* studies that consider the

interplay between new and existing parties over the course of several election campaigns à la Meguid (2005), especially with an eye to new party formation. Such qualitative designs may be better able to tease out the roles played by the different types of parties in expanding the political agenda, and hence the extent to which the rise of new issues will be accommodated by the existing party system – as well as the role of the electoral system and other political institutions such as the regime type in the process.

Future work should also build upon this study to investigate more normative questions about democracy. One of the take-away points of this study is that many conflicts may be salient at the same time that the electoral system confines competition to two parties, leaving much of the raw space uninhabited and giving rise to large differences between the raw and the effective dimensionality – as in the United States. Hence, a feast may go hand-in-hand with a famine: the party system expresses many conflicts but presents voters with only a few sets of positions on those conflicts. Does this have consequences for democracy, such as for citizens' attitudes towards the regime? And might it be better if parties kept some issues off of the political agenda? We stress that it is the *combination* of a high dimensional raw space and a few parties that strikes us as potentially problematic, not just a few parties. Another take-away point is that when the electoral system is restrictive, society's influence on the party system is limited to the realm of the political agenda. Yet, to date, the issue of how society shapes the political agenda writ large has largely been side stepped by the literature, which has instead focused on either how society shapes the number of parties (e.g. Clark and Golder, 2006) or how society shapes party positions along a single dimension. To elaborate regarding the latter, existing studies with the goal of evaluating the quality of democratic representation have empirically assessed the congruence of citizens' and parties' positions on the (effective) left–right dimension (e.g. Powell, 2000). While we do not dispute that the left–right dimension is generally able to assimilate many of the issues in competition, this ability does vary across space and time. A more basic approach, then, is simply to compare the set of issues salient to political parties with the set of issues salient to voters. Are the two commensurate? And, if not, are parties keeping some issues off the political agenda? Or are they trying to shape preferences by putting issues on the agenda that are not currently on voters' radar? The raw dimensionality, and specifically the conflict saliences that feed into it, can aid us in answering these questions and hence in relating the voter (mass) and party-defined (elite) spaces – a topic of both normative and practical import.

## Appendix I

### Measuring raw ideological dimensionality

Measuring the raw ideological dimensionality requires CMP coding categories to be associated with each of the seven potentially salient conflicts. These associations are:

Socio-economic: PER401, 'Free Enterprise'; PER402, 'Incentives'; PER403, 'Market Regulation'; PER404, 'Economic Planning'; PER406, 'Corporatism'; PER407, 'Protectionism, Positive'; PER408, 'Protectionism, Negative'; PER409, 'Keynesian Demand Management'; PER410, 'Productivity'; PER411,

'Technology and Infrastructure'; PER412, 'Controlled Economy'; PER413, 'Nationalization'; PER414, 'Economic Orthodoxy'; PER415, 'Marxist Analysis'; PER503, 'Social Justice'; PER504, 'Welfare State Expansion'; PER505, 'Welfare State Limitation'; PER506, 'Educational Expansion'; PER507, 'Educational Limitation'; PER701, 'Labour Groups, Positive'; PER702, 'Labour Groups, Negative'; and PER703, 'Middle Class and Professional Groups'.

Ethnic: PER301, 'Decentralization'; PER302, 'Centralization'; PER601, 'National Way of Life, Negative'; PER602, 'National Way of Life, Positive'; PER607, 'Multiculturalism, Positive'; PER608, 'Multiculturalism, Negative'; PER705, 'Underprivileged Minorities'; and PER706, 'Non-economic Demographic Groups'.

Religious: PER603, 'Traditional Morality, Positive' and PER604, 'Traditional Morality, Negative'.

Post-materialist: PER416, 'Anti-growth' and PER501, 'Environment'.

Foreign policy: PER101, 'Foreign Special Relationships, Positive'; PER102, 'Foreign Special Relationships, Negative'; PER103, 'Anti-imperialism'; PER104, 'Military: Positive'; PER105, 'Military: Negative'; PER106, 'Peace'; PER107, 'Internationalism, Positive'; PER108, 'EC-EU, Positive'; PER109, 'Internationalism, Negative'; and PER110, 'EC-EU, Negative'.

Democratic-authoritarian: PER201, 'Human Rights and Freedom' and PER202, 'Democracy'.

Urban-rural: PER703, 'Agriculture and Farmers'.

Note that the democratic-authoritarian conflict is only considered potentially salient for the three countries in the analysis that underwent third-wave transitions to democracy: Greece, Portugal and Spain. Some country- and time-specific modifications to these associations between coding categories and conflicts are introduced to deal with the CMP's unfortunate inclusion of disparate issues in several categories, primarily the non-socio-economic ones (see the supplemental paper for details).

The salience of the  $l$ th conflict to a party in the  $k$ th country-election is then calculated by dividing the number of quasi-sentences in the party's manifesto that fall within the associated CMP coding categories by the total number of quasi-sentences, after excluding from the total those quasi-sentences deemed valence issues (i.e. any quasi-sentences in coding categories that are *not* associated with a conflict as described above, such as the category 'Corruption'). The overall salience of the  $l$ th conflict in the  $k$ th country-election is then calculated by averaging over the competing parties' saliences. Finally, the dimensionality for the  $k$ th country-election is calculated using Molinar's (1991) version of the effective number,  $NP_k$ , as follows:

$$NP_k = 1 + N_k \frac{\sum_l R_{k,l}^2 - \max_l (R_{k,l}^2)}{\sum_l R_{k,l}^2},$$

where  $R_{k,l}$  is the overall salience of the  $l$ th conflict in the  $k$ th country-election and  $N_k$  is the well-known effective number of conflicts for the  $k$ th country-election. The values of the resulting measure range from a minimum of 1.0 in Sweden 1964 to a maximum of 3.0 in Israel 1959.

## Appendix 2

### Countries and elections

Country	Years	Number of elections			
		Models 1, 3	Models 2, 4	Model 5	Model 6
Australia	1946–1998	22	0	15	0
Austria	1949–1995	15	15	11	11
Belgium	1946–1995	17	17	12	12
Canada	1945–1997	17	0	11	0
Denmark	1945–1998	22	22	16	16
Finland	1945–1995	15	15	10	10
France	1946–1997	14	14	10	10
Germany	1949–1998	14	14	9	9
Greece	1974–1996	9	9	8	8
Iceland	1946–1995	16	16	10	10
Ireland	1948–1997	16	16	12	12
Israel	1949–1996	14	0	0	0
Italy	1948–1996	13	13	9	9
Japan	1960–1996	13	0	0	0
Luxembourg	1954–1994	9	9	7	7
Netherlands	1946–1998	16	16	11	11
New Zealand	1946–1996	18	0	11	0
Norway	1945–1997	14	14	10	10
Portugal	1976–1995	8	8	7	7
Spain	1977–1996	7	7	6	6
Sweden	1948–1998	17	17	13	13
Switzerland	1947–1995	13	0	9	0
United Kingdom	1945–1997	15	15	10	10
United States	1948–1996	13	0	0	0

Omitted CMP elections are Italy 1946, Portugal 1975 and Luxembourg 1945–51.

### Notes

Early versions of this article were presented at the 2006 Annual Meeting of the American Political Science Association, Philadelphia, PA, 31 August to 3 September and the 2006 National Conference of the Midwest Political Science Association, Chicago, IL, 20–23 April. An even earlier version can be found as parts of Chapters 4 and 5 of my dissertation. Thanks to Jim Adams; Michael McDonald; Benjamin Nyblade; Lorelei Moosbrugger; Jack Nagel; Tony McGann; Garrett Glasgow (in no particular order); and several anonymous referees for helpful comments on and/or discussions related to the article. All remaining errors of course remain my responsibility.

1. To elaborate, parties may place conflicts that are salient within society on the political agenda (e.g. Cantillon, 2001); parties may seek to suppress conflicts that are salient within society by keeping them off of the political agenda (Cantillon, 2001); and parties

- may also seek to shape the set of societally relevant conflicts by putting conflicts not salient within society on the political agenda (Przeworski and Sprague, 1986). We note that conflicts salient within society are in turn likely to have roots in society's exogenous or latent features such as its ethnic heterogeneity (Clark and Golder, 2006). However, relating these various spaces to one another is a topic beyond the scope of this article; see Stoll (2004) for some preliminary steps in this direction.
2. This becomes even clearer when we take into account the conventional understanding of 'political' or 'politicized' in the electoral and party systems literature: that a political party breathes organizational life into the conflict (e.g. Bartolini and Mair, 1990).
  3. In fact, regarding its nomenclature, Lijphart's earliest work (1981) used the term 'ideological dimensions'. We can only speculate as to why he later (in 1984) switched to the less appropriate label of 'issue dimensions', which subsequent scholars then adopted.
  4. Laver and Hunt (1992: 23–4) term this version of the concept the 'real' dimensionality. We employ the label 'raw' instead of 'real' because the latter seems to imply that this definition of the concept is superior to others, an implication that we do not intend. Instead, we side with Collier and Alcock (1999: 539) in believing that 'how scholars understand and operationalize a concept can and should depend on what they are going to do with it'.
  5. Alternatively, if his intent was to measure the raw dimensionality, the high association between the number of dimensions and the number of parties that he finds, in part a function of the prior coding decision, suggests that these measurements may have fallen victim to coding bias, that is, to the value of the dependent variable, the number of parties, influencing the coding of the independent variable, the dimensionality (Stoll, 2004).
  6. The CMP matches the quasi-sentences of each party's manifesto for a particular election with a coding category of policy, such as 'Free Enterprise' and 'Foreign Special Relationships: Positive'. The number of quasi-sentences in each category is then an indicator of the salience of that policy issue to the party. See Budge et al. (2001), and particularly the Appendix to the latter volume, for a detailed description of the project.
  7. Although this is ostensibly a measure of *issue* dimensionality, it is better viewed as a measure of *ideological* dimensionality, because the procedure just described simultaneously collapses issue into ideological dimensions, as we argued above in general terms.
  8. Let  $v_i$  be the vote-share of the  $i$ th political party competing in an election. Then the effective number of electoral parties for that election is calculated as follows:
 
$$\frac{1}{\sum_{i=1}^n v_i^2}$$
  9. These scholars have not tested the direct linkage between the party-defined political agenda and new parties; rather, they have tested the indirect linkage between the voter-defined political agenda and new parties. Moreover, the measures of new societal issues have been indirect proxies such as the size of the population and ethnic heterogeneity.
  10. See, for example, Kitschelt's (1997) work on the emergence of the authoritarian–libertarian dimension and the rise of radical right political parties in Western Europe. See also Meguid's (2005) work on how the success of niche (green and radical right) parties depends upon mainstream parties' responses to their entry, although we note that she black-boxes the question of entry (i.e. new party formation) itself.
  11. For example, Lipset and Marks (2000) argue that one of the reasons why third parties have failed in the United States is the electoral system, which impedes successful third-party entry.

They argue that the other major reason is the institutional porousness of the Democratic and Republican parties, which leaves them vulnerable to internal takeovers. But see Chhibber and Kollman (2004) for an alternative institutional explanation.

12. We calculate this statistic using Taagepera's (1997) method of bounds. This procedure is designed to deal with small parties, which are commonly lumped together in one 'other' category by most election statistics.
13. New parties are those that either result from a split in an existing party or are genuinely new; they do not include mergers and electoral alliances (see, for example, Tavits, 2006: 106). An alternative operationalization is simply the raw number of electoral parties, unweighted by vote-shares. However, we are unaware of existing time-series cross-sectional data on this variable (e.g. Tavits, 2006: 116).
14. In earlier work, we developed several measures of what we have called the raw ideological dimensionality (Stoll, 2004). The measure introduced in this article makes only one minor change (which we believe is an improvement) to the most preferred of those measures, which we note leads to similar conclusions to those reported here. See the supplemental paper available from the author's website for details regarding this and other models discussed but not presented in this article. We are unaware of other existing measures of the raw ideological dimensionality.
15. See Stoll (2004) for a review of existing expert surveys as well as other data-generation procedures such as elite surveys. Unfortunately, large-*N* surveys have always focused on empirically identifying party positions along a common left-right dimension – not on quantitatively eliciting differences in dimensionality across either space or time. Leaving aside practicality, theoretical reasons for preferring the CMP to expert judgements are offered by Budge (2000). The most heated criticism of the CMP has focused on its use of issue salience to construct measures of parties' *positions* (e.g. Laver and Garry, 2000), which is not how either we or Nyblade (2004) use it. Rather, we take the salience of issues in parties' manifestos as an indicator of the salience of the issues to parties: salience is salience is salience, in other words. Other criticism of the CMP has focused upon its reliability (e.g. Mikhaylov et al., 2008). While we recognize this to be a concern, there is no available alternative source of data for us to use; moreover, to the extent that the CMP data are plagued by non-systematic measurement error, our findings will be biased downwards. Hence, we are stacking the deck against our hypotheses.
16. Majoritarian electoral systems are those that use either plurality rule; absolute and qualified majority requirements; the alternative vote; or the single non-transferable vote (Golder, 2005). Of the countries in our analysis, Australia, Canada, France (except 1986), pre-1996 Japan, pre-1996 New Zealand, the United Kingdom and the United States employ majoritarian electoral systems using this definition. A well-known alternative operationalization is the logged average district magnitude (see, for example, Clark and Golder, 2006). The drawback to this operationalization is that it equates countries like Germany that have mixed-member proportional (i.e. permissive) electoral systems with countries like the United Kingdom that have plurality, single-member district (i.e. restrictive) electoral systems: both have average lower-tier district magnitudes of one. This strikes us as a significant disadvantage. Nevertheless, we note that using this measure instead of the simple dummy variable for majoritarianism yields similar conclusions about the hypotheses when the raw ideological dimensionality is employed, but less support when using the raw issue dimensionality.



17. We do not include country fixed effects for consistency with the literature. However, including them yields generally similar results, with only H2 receiving less support. A random effects model is not used because our dataset is not clearly panel in structure, as per Beck and Katz (1996).
18. In spite of their inclusion in the CMP, we – like Golder (2005) – exclude the Italian 1946 and Portuguese 1975 constituent assembly elections, as well as the sub-national Luxembourgian 1945–51 elections. We take data for the five CMP elections that do not appear in Golder (Canada 1945; Denmark 1945; Finland 1945; Norway 1945; and the United Kingdom 1945) from Stoll (2004). Note that we confine ourselves to the CMP's advanced industrial democracies, that is, we exclude Turkey, out of a fear of comparing apples to oranges.
19. Dropping either Belgium, Italy or Japan does not substantively alter the conclusions reported below. We drop the latter two countries because of the fragmenting of their party systems and the former because the CMP is based on an analysis of newspaper coverage of Japanese parties' positions, not on their actual election manifestos. We thank Benjamin Nyblade for bringing the latter point to our attention.
20. Allowing the number of new parties to serve as the dependent variable for consistency with the other models and using negative binomial regression yields substantively similar conclusions regarding H2 when using our measure of the raw ideological dimensionality, but less support when using Nyblade's (2004) measure of raw issue dimensionality.
21. Beck and Katz (1995) drew attention to the potential problem of cross-country contemporaneous correlations with political economy data. However, there are few electoral equivalents of global economic shocks, which suggests that this problem is not likely to surface in our dataset. Furthermore, even if we did worry about cross-country contemporaneous correlations, it would be difficult to obtain good estimates with few common time periods across countries and  $T \ll N$ .
22. An alternative robust estimator, the country-clustered, yields less support for the hypotheses, particularly when using the measure of raw issue dimensionality from Nyblade (2004); however, the conclusions reported here remain substantively supported when using our measure of raw ideological dimensionality.
23. Using the notation of these equations, the calculation is as follows: for permissive (non-majoritarian) electoral systems, the marginal effect is simply equal to  $\beta_1$ ; for restrictive (majoritarian) electoral systems, it is  $\beta_1 + \beta_3$ .

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