



Ballot layout effects in the 1995 elections of the Brussels' government

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Abstract. Analysing data for the 1995 Regional Elections in Brussels we show how the layout of the ballot affects voting behaviour as reflected by the candidates' preferential votes. We discuss how this special case of Ballot Position Effects can be reconciled with existing models of (expressive) voting.

1. Introduction

The 2000 U.S. presidential elections have illustrated how details in the formal organisation of democratic elections may have far-reaching political consequences. The specific layout of the 'butterfly ballot' in Palm Beach, Florida and how this (may have) misled voters was a hotly debated issue in the world press and political world. It goes without saying that the idea that the identity of the U.S. president may depend on the layout of a voting bulletin does not fit easily into most people's normative conception of a democratic state. Ideally, election results should not depend on the layout of the ballot form. And, certainly, such forms should not be misleading.

The U.S. case is an extreme one. Still, a layout-neutral election result may be unrealistic. Layout matters. Any newspaper editor will tell you. And, like newspapers, ballot forms have a specific layout. If the newspaper editor is right, then it is possible that the layout of a ballot form affects electoral outcomes. Whether this is actually the case – in other words: whether layout effects in voting behaviour exist – is the central question of this paper.

Since 1991 there has been a transition in Belgian elections from manual towards computerised voting. One constraint imposed by the use of the computer is that the traditional layout of ballot forms could not be maintained because of the dimensions of the computer screen. It proved necessary to display the names of the candidates in several columns instead of one. To see whether this difference in layout affects voting behaviour we analyse the

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May 1995 elections of the Brussels Regional Government. These elections offer an interesting natural experiment as the parties presented identical lists of candidates (in the same order) to the electorate in three different layouts. This allows comparing election results (preferential votes) in three different ‘treatments’.

Ballot Layout Effects have, to our knowledge, not been analysed systematically. They can be considered as a special case of so-called Ballot Position Effects. These refer to the observation that politicians in positions at or near the top (bottom) of a ballot obtain systematic political advantage from this (Section 2). Section 3 gives information on the institutional context of the 1995 elections of the Brussels Regional Government and on the different layouts that were used. Our empirical analysis is in Section 4. We find strong evidence of the presence of layout effects. Section 5 discusses both the political consequences of the observed Ballot Layout Effects and the way in which the presence of such effects may yield insights into the motivations of individual voters. Section 6 concludes.

2. Ballot Layout Effects and Ballot Position Effects: literature

Ballot Position Effects refer to the empirical observation that the order of candidates on the candidate list affects their electoral success (for a review, see Darcy and McAllister, 1990 and Miller and Krosnick, 1998). The prototype situation is one where a number of candidates running for a single office are ranked alphabetically in a single column on a ballot form and where those candidates who are ranked high – early in the alphabet – obtain more votes *ceteris paribus*. Such a primacy effect creates obvious possibilities for strategic behaviour (Hamilton and Ladd, 1996). To illustrate this, Darcy and McAllister (1990, 12) refer to the example of the Australian 1937 Senate elections in New South Wales. The Labor Party nominated four candidates whose surnames started with A, thus being placed at the top of the ballot form. All four were elected. To prevent this behaviour, ballot positions have been determined by lot from 1940 onwards. Also some U.S. states and several countries assign candidates’ places on the ballot by drawing lots or by using name rotation (Taebel, 1975: 519n; Darcy, 1986: 648). However, these precautions, especially name rotation, can be very costly in terms of ballot printing, administrative burden, increased possibility of counting errors and so on (Darcy, 1986: 648–649).

Not only the *top* position in a list of candidates may bring electoral advantage. Several studies find that candidates listed near or at the *end* of the ballot receive more votes than we would expect if no positional effects were present. Byrne and Pueschel (1974: 781–782) for example show in their analysis of

3600 candidates in 500 California central committee elections between 1948 and 1970 that there is an increasing advantage of being on lower places on the candidate list. Other studies, considering elections with 'longer ballots', find that the lowest as well as the highest ballot positions are advantaged (Bain and Hecock, 1957: 72–75 and Robson and Walsh, 1974: 200). This is referred to as the “J-curve pattern” (Mueller, 1970: 399 and Darcy and McAllister, 1990: 8). This combination of first and last position effects has been interpreted as an indication of a voter's tendency to skip the middle positions when faced with long candidate lists (Robson and Walsh, 1974; Bowler, Donovan and Happ, 1991: 564).

From a cognitive theoretical perspective, primacy effects (giving advantage to the candidates at top positions) can be expected for a number of reasons. For example, names that are read first may be subject to deeper cognitive processing (Krosnick and Alwin, 1987: 203). The reason is that as people subsequently look at a number of items to choose from, their mind becomes clogged with thoughts about the previous alternatives. This process limits their power to generate adequate argumentation concerning later items. As psychological research has shown that early processing is likely to be dominated by the generation of cognitions that justify the selection of an item, later items are likely to generate a lower amount of supportive thoughts. Hence, they will be selected less frequently, creating a primacy effect.

An alternative explanation lies in Simon's satisficing principle (Simon, 1957). This implies that voters going through a list will stop searching when they have discovered an acceptable candidate. Such a decision rule is likely in a context where the costs of making a mistake are small. As Downs (1957) pointed out, this is most likely in most elections as the probability of any single vote having an actual effect on post-electoral politics is very small. Krosnick and Alwin (1987) and Miller and Krosnick (1998) provide empirical support for these theories, also showing that the order effects are stronger when voters are low in cognitive sophistication or when they are less knowledgeable about politics.

Ballot Layout Effects can be considered a special case of Ballot Position Effects. A list of candidates can be presented on the ballot in different ways while still preserving their order. The possibility that this presentation might affect electoral outcomes has received only minor attention. Mueller (1970) treats it as a case of Ballot Position Effects while examining the 1969 LA Junior College Board primary election in which 133 candidates ran for office. These could not be matched on one single page and were distributed over as much as 7 ballot pages. Mueller (1970, 399, *italics added*) found that “the candidates listed last *on each page* received some 5000 votes more than one would expect on the basis of other considerations”. Although this result failed

to reach statistical significance, we feel it has received too little attention in the literature where it has not been formally distinguished from other Position Effects (cfr. Darcy and McAllister, 1990: 8). However, the candidates listed last on page 1 to 6 in the LA Junior College Board election cannot be considered as candidates in the last place on a ballot. Rather, they are presented on the last place of a part of the ballot due to its layout. If the candidates had been placed in a single column it is unlikely that the same candidates (being no longer listed at the bottom of the page) would have received as many votes as they have now. This makes it a precursor of our own empirical analysis of the 1995 Regional Elections in Brussels.

While the published literature on layout effects may be limited, it is not hard to foresee that this will change in the near future. The 2000 presidential elections in the U.S. can be expected to lead to a number of additional studies. Indeed, it is recognised that the ‘butterfly ballot’ in Palm Beach, Florida may have decided the elections to the advantage of President Bush Jr. The layout of the ballot misled voters into voting for another than their preferred candidate (Wand et al., 2001).

3. The Brussels Elections of 1995

Since 1991 there has been a transition from manual towards computerised voting. In that year, the computer was used to register votes in 2 of the 208 Belgian voting districts. In the general and regional elections of 1995 and 1999, computerised voting was applied in 23 and 64 districts respectively. This transition offers a unique opportunity to assess the presence and importance of layout effects. Indeed, the traditional layout of voting bulletins could not be maintained because of the dimensions of the computer screen. It proved necessary to display the names of the candidates of each given party in several columns instead of one (as had been the case under manual voting).

The Belgian political system is based on proportional representation. Individual voters have a number of options to cast a valid vote. They can vote for a political party (one party) or they can cast one or more preferential votes for a number of candidates from a given party. To select the 75 members of the Brussels’ Regional Parliament, elections are organised in 8 districts (“cantons”). For the purposes of the elections, these are purely administrative entities. This means that the lists of candidates and the parties are identical across districts. For each party the order in which the (maximum of 75) candidates appear on the voting bulletin is identical across districts. The election outcome is obtained by the simple aggregation of all results.

Concerning the 1995 elections, one major organisational difference could be observed among the districts: four districts used the computer to register

1.	23.	45.	67.
2.			
			...
...			75.
22.	44.	66.	

Figure 1. LO-22 format

votes, whereas the other four districts retained the traditional manual (“pencil and paper”) voting. In the “manual districts”, voters received a single form on which all parties and candidates appeared. For each party, candidates were ranked in one column. The number of columns on the form (no less than 23!) thus corresponded with the number of parties that participated in the election. Columns contain up to 75 names of candidates though smaller parties typically had fewer candidates. It is clear that all this information cannot be given on a single computer screen. Therefore, in “computerised districts”, a stepwise procedure was used. On entering the ballot box, voters saw a screen showing them the different political parties. Having chosen a party, the voters got a list of candidates. Because of the size of a computer screen, this list was distributed over different columns. This had obvious layout implications as can be seen from Figure 1. This figure gives the layout as used in three of the four computerised districts (Brussels, Sint-Jans Molenbeek and Sint-Gillis): the candidates were ordered in 3 columns of 22 and 1 column of 9 politicians. In the fourth computerised district (Sint-Joost-ten-Node) a different layout was used: candidates were ordered in 5 columns of 15. In what follows, we denote these formats as LO-22 and LO-15 respectively. The “manual” format is denoted as LO-75. This format was used in four districts (Anderlecht, Elsene, Schaarbeek and Ukkel).

4. Empirical analysis

We investigate how the position on the ballot affects the preferential votes obtained by an individual politician, given his/her position (order) in the candidate list. We do so by comparing the preferential votes that candidates obtained in three distinct ‘treatments’ LO- k where k corresponds with the format of the ballot as given by its number of rows. So: $k \in \{15, 22, 75\}$. Following the literature on Ballot Position Effects and Mueller’s (1970) analysis,

we concentrate on layout effects that may occur for candidates who are listed at the top or at the bottom of a column.¹ It should, of course, be noted that ‘treatments’ differ not only with respect to the layout but also with respect to the use of computerised or manual voting. To control for possible non-layout effects of computerised voting,² we use the *share* of votes that a given candidate obtained in the total of preferential votes obtained by candidates from his/her party. $S_{i,k}^j$ gives the share of votes for politician i in the list of party j for those districts where format k was in use.³ Politicians are identified by their rank order, so politician i ($i = 1, \dots, I$) is ranked i -th by his/her party j ($j = 1, \dots, J$).

4.1. Hypotheses and method

If no layout effects occur, then we expect the share of preferential votes under each format to be identical for each individual politician *ceteris paribus*. Indicating the format by $k(m)$, this means:

$$H_0 : \quad S_{i,k}^j = S_{i,m}^j \quad \forall i, j \text{ and } \forall k, m$$

where $S_{i,k}^j$ gives the (average) vote share of politician i in districts with LO- k format (where $\sum_i S_{i,k}^j = 1$). If layout effects occur, such that candidates at the top or at the bottom of a column in format k obtain a systematic advantage, we can identify ‘critical positions’ at the top (T) and bottom (B) of each column. The sets of critical positions depend on the format. The sets of critical ‘top’ positions for LO-15, LO-22 and LO-75 are $T-15 = \{1, 16, 31, 46, 61\}$, $T-22 = \{1, 23, 45, 67\}$ and $T-75 = \{1\}$ respectively. The sets of critical ‘bottom’ positions are $B-15 = \{15, 30, 45, 60, 75\}$, $B-22 = \{22, 44, 66, 75\}$ and $B-75 = \{75\}$ respectively.

To test for the presence of layout effects, we make pair-wise comparisons of the (three) different formats. For example, we take the vote shares of the politicians in the critical positions in LO-15 and compare these with their results in both LO-22 and LO-75. More specifically, we investigate the presence of layout effects for the politicians in critical ‘top’ positions and in ‘bottom’ positions separately.

It is important to note that for any comparison between LO- k and LO- m we exclude vote shares of politicians who are in critical positions in both sets. For example, the critical ‘top’ positions for LO-15 are the elements of $T-15$ (see above). When comparing the vote shares of politicians in these positions in the LO-15 format with their results in the LO-75 format we take into account that position 1 is not only an element of $T-15$ but also of $T-75$. We limit our analysis to those politicians who were in critical positions only in the reference layout (here, in LO-15). As a result the politicians in positions

1 and 75 are systematically left out of the analysis. A similar problem occurs for the politician who is at the bottom of the 3rd column in LO-15 (position 45) as this position corresponds with the top of the 3rd column in LO-22. When comparing vote shares for ‘bottom’ positions in LO-15 with the vote shares in LO-22 we exclude this position from the set.

Now that we have identified the critical positions on *a priori* grounds, the presence of layout effects implies (for top and bottom positions):

$$H_1 : S_{i,k}^j > S_{i,m}^j \quad \forall i \text{ critical in } k \text{ and non-critical in } m (k \neq m)$$

The sign-test (Siegel and Castellan, 1988) provides a simple decision criterion. The test assumes that under H_0 the probability that a candidate in position i obtains a larger vote share under layout k (where i is critical) than under layout m (where i is non-critical) equals $1/2$. If being in a critical position leads to systematic electoral advantage (H_1), then this probability is larger. The test involves looking at how often a politician in a critical position obtained a larger vote share under the layout where (s)he had that critical position than under alternative layouts. Under H_0 the expected number of this equals $1/2$ of the total number of observations. If we observe a larger number, then a binomial test gives the probability that this number is observed under H_0 .

The main reason for applying a non-parametric test is that the underlying distributions are unknown. More concretely, we compare vote shares of candidates i in critical positions with the shares of the same (i -th) candidate in a non-critical position. Lacking a general (empirical) model of how different layouts affect each possible position, we only look at the dichotomous variable critical/non-critical position. We are unable to predict differences in expected vote shares *within* the group of non-critical positions. For example, we cannot tell whether a candidate in position 15 (and thus critical in LO-15) should expect more, less or the same amount of votes in LO-22 versus LO-75. Neither do we have a theoretical ground to tell how the advantages within the group(s) of critical positions relate (for example, we have no basis to predict differences in layout effects between candidates in positions 15, 30, 45 and 60 in LO-15). An evident ‘drawback’ of this non-parametric approach is that it only allows us to identify the presence (or absence) of layout effects. In order to obtain an indication of the magnitude of the effects, we performed a t-test on differences in vote shares, the results of which are summarised in appendix (see further). For the reasons just given these results should be treated with caution.

Table 1. Multi column (LO-15 & LO-22) versus single column (LO-75)

			z-statistic
<i>Top positions</i> ¹			
LO-15 & LO-22 > LO-75	65 out of	84 cases	4.91**
<i>Bottom positions</i>			
LO-15 & LO-22 > LO-75	71 out of	84 cases	6.22**

* = significant at 5%; ** = significant at 1%.

¹The first named layouts in the first column refer to the critical positions. For example, for top positions, 'LO-15 & LO-22' refers to positions 16, 31, 46, 61 (LO-15) and 23, 45, 67 (for LO-22). With seven critical positions and 12 parties, we have $7 * 12 = 84$ cases.

4.2. Results

As mentioned, 23 political parties participated in the elections. Many of these are small parties that have a number of candidates far below the maximum of 75. For our analysis, we concentrate on the election results of parties that had candidates in all critical positions in the LO-22 format. This gives $J = 12$ parties. Among those, 10 had 75 candidates, the others had a list of 73 and 74 candidates respectively. Obviously, the number of observations differs depending on the formats that are considered. It ranges between 24 and 48. The maximum number of observations is obtained when comparing LO-15 with LO-75. The former format has 5 top positions. Still, as discussed, one overlaps with LO-75 leaving 4 positions. As we have 12 parties (and thus politicians for each position), this means that we have $4 * 12 = 48$ cases for which we compare vote shares.

Before presenting the results of the pair-wise comparison, we investigate the presence of layout effects more generally by comparing the single column (LO-75) layout with the multi-column layouts. Table 1 summarises the results. The table shows that politicians whose name appeared at the top of a column (in either LO-15 or LO-22) obtained more preferential votes under these formats than under LO-75 in no less than 71 out of 84 cases. Politicians at the bottom of a column had larger vote shares in the multi-column ballots in 65 out of 84 cases. These are very high frequencies. Given the large number of observations, the sign test can be approximated by the normally distributed z-statistic with mean 0 and unit variance (Siegel and Castellan, 1988: 83). After correcting for continuity (Siegel and Castellan, 1988: 84) we find this statistic to be 6.22 and 4.91 respectively. The probability of such z values under H_0 is less than 0.0001. The results in Table 1 can thus be interpreted as unambiguous evidence of systematic layout advantages for politicians at either the top or the bottom of a column.^{4,5}

As mentioned, the non-parametric approach only allows identifying the presence of layout effects. To have an idea of the magnitude of the effects, we performed a t-test on the differences in vote shares between the respective (sets of) layout(s) for each candidate in a critical position.⁶ With respect to the significance of the layout effects, the results summarised in Table A.1 in appendix are in line with the results in Table 1. The presence of layout effects is confirmed. Table A.1 indicates that on average a candidate wins 0.35% of the party's preferential votes when (s)he is listed in a top position and 0.58% when in a bottom position. While these numbers are not 'impressive' at first sight they are not unimportant when compared to the average percentage of votes that the candidates obtain in the reference (LO-75) layout. Indeed, on average the candidates that took top positions in LO-15 or LO-22 obtained only 0.58% of the preferential votes for their respective parties in LO-75. So, the 0.35% gain reported in Table A.1 implies that the vote shares of these candidates increases by 60.1% of their LO-75 result. Similarly, candidates on bottom positions in the multicolumn layouts obtained a gain of 85.7%.

The data in Table 1 (and A.1) give a general overview. Table 2 (and A.2 in the appendix) gives separate results for the critical positions in LO-15 and LO-22 respectively.⁷ In *all* cases we observe that politicians at critical positions obtain a larger share of the votes. Still, there are marked differences. Indeed, leaving aside the vote shares of 'critical' politicians in LO-15 compared to their result under LO-22, the observed layout effects are significant at the 1% level. We will turn to this 'LO-15 versus LO-22'-comparison further in the text.

In Table 2, a number of observations can be made. First, the results suggest that layout effects are (marginally) more pronounced for politicians at the bottom of a column. Indeed, the z-statistic is higher for bottom positions than for top positions in each of the four comparisons.

The most convincing result is certainly the one in the last row of Table 2. Here the critical 'bottom' positions in LO-22 are considered (B-22). The evidence is overwhelming: there were 36 candidates (3 for each party) whose name appeared at the bottom of a LO-22 column (while not being a critical position in LO-75). Each of them – without a single exception – obtained a larger vote share under the LO-22 format than under the LO-75 format.

Interestingly, the critical positions in LO-22 appear to induce more explicit political advantage than the critical LO-15 positions. This finding is confirmed in Table A.2 in appendix. There we find that candidates in LO-22 top positions have on average a gain that is more than twice as large than candidates in LO-15 top positions. For bottom positions, this advantage among critical positions is even stronger. Candidates in bottom positions of a LO-22 have an electoral gain of about 1% of all preferential votes for their party.

Table 2. Pair-wise comparison of layouts

			z-statistic
<i>Top positions</i>			
LO-15 > LO-22	29 out of	48 cases	1,30
LO-15 > LO-75	33 out of	48 cases	2,45**
LO-22 > LO-15	19 out of	24 cases	2,65**
LO-22 > LO-75	32 out of	36 cases	4,50**
<i>Bottom positions</i>			
LO-15 > LO-22	23 out of	36 cases	1,50
LO-15 > LO-75	35 out of	48 cases	3,03**
LO-22 > LO-15	29 out of	36 cases	3,50**
LO-22 > LO-75	36 out of	36 cases	5,83**

* = significant at 5%; ** = significant at 1%.

The corresponding gain for LO-15 bottom positions is about 4 times smaller. From the data and information we have, it is hard to tell what explains these differences between LO-15 and LO-22.⁸ It could be argued that in the LO-22 format the critical positions catch attention more easily, if only because the format has fewer columns and thus fewer top and bottom places. Moreover, it is possible that a name in the bottom row of the third column in LO-22 (position 66, see Figure 1) draws special attention as there are no names to the right of it. Of course, such explanations are at most tentative. Still, that this (66th) position in LO-22 is “special” can also be illustrated by looking at the relative advantage that candidates in this position obtain. We observe that candidates at position 66 obtain on average 0.54% of the preferential votes for their party in LO-75 format. The same candidates obtain no less than 2.48% of the preferential votes in LO-22 formats! Though these numbers are based on election outcomes of 12 politicians only, their magnitude is striking. For all other critical positions, the relative advantage is (much) lower. Nevertheless, the important thing is that for all critical positions the average vote share in those districts where the politician was at the top or bottom of a column was larger than in the other districts. We find only one exception, namely position 16 in LO-15: there, the average vote share under LO-75 and LO-15 is 1.24% and 1.10% respectively.

When comparing the LO-15 with the LO-22 format, Table 2 reveals a striking asymmetry. Politicians at critical positions in LO-15 do have a political advantage in the LO-15 format relative to the LO-22 format. However, as

mentioned already, this electoral advantage is insignificant. Still, the politicians at critical positions in LO-22 have an electoral advantage (compared to their LO-15 result) that is significant at 1%. This asymmetry illustrates that ‘minor’ changes in the layout may have strong political consequences.

5. Discussion

The unambiguous presence of Ballot Layout Effects distorts the voting outcome. In what follows we discuss the political effects from this. Also, at a more fundamental level, we discuss how an analysis of Ballot Layout Effects may help to understand the underlying characteristics of individual voting behaviour.

5.1. *Political consequences*

While the electoral gain in terms of preferential votes for some candidates is indeed very high (doubling the share of preferential votes is no exception), the *direct* political effect in the elections under consideration is less spectacular. On closer inspection, we observe that only one candidate on a T or B position was actually elected.⁹ This, of course, does not mean that layout effects will never make a difference. It should not be forgotten that in the context of the Brussels’ elections, the impact of the effects was moderated by the fact that different layouts were used simultaneously. As such, the advantage that some politicians obtained in some districts was levelled out by their results in other districts. Further, and more generally, marginal effects on the number of votes may have enormous political consequences in alternative circumstances. The recent U.S. presidential elections are a perfect illustration. There, layout effects from using the ‘butterfly ballot’ may have decided on the U.S. presidency. Few will deny that this is a highly relevant political consequence. It should be noted that the layout effects in Palm Beach were of an admittedly different nature than those observed in Brussels. In the U.S. case, layout effects reflected the misleading nature of the ballot format such that voters may have voted for a candidate that was not their favourite.

The absence of direct political effects does not exclude the presence of important *indirect* effects. For example, the parties can interpret the high number of preferential votes that individual politicians obtain as signals of support for those politicians and the ideas they stand for. It is not unlikely that these ideas, then, receive more attention on the political agenda. Further, it can certainly be expected that these politicians obtain a better rank in future elections (as, indeed, the order in which politicians are ranked on a party’s list reflects to a large extent the expected number of preferential votes).

Our results unambiguously show that the democratic outcome depends on details in the formal organisation of the election. This raises some fundamental questions with respect to the democratic process. The mere presence of Ballot Layout Effects may be taken to imply that election outcomes are somehow ‘inferior’. For example, most will agree that a ‘Palm Beach butterfly ballot effect’ leads to an inferior electoral outcome since voters were misled. In general, a layout driven election is likely to be considered inferior to one in which no layout effects occur. Still, such an election may be hard to organise given the existing electoral system in some jurisdictions. As a practical solution for the Brussels’ situation, one could neutralise layout effects by randomising the order of the candidates on any given list. This, however, makes the distribution of party votes among the candidates in function of their position on the list impossible (or at least random). Alternatively, one could work with even more layouts than ‘just’ three. Then, the number of names in a column could be randomised so that each politician has an equal probability of being on top (bottom) of a column. But this may be difficult to organise in elections – like the one under investigation – where each list has 75 candidates. It may well be that any such election is sub-optimal relative to the layout-neutral ideal. The latter may then serve as a theoretical benchmark, much like a full-information equilibrium in the market.

5.2. *Expressive voting?*

We believe that the mere existence of layout effects may help understanding the nature of voter rationality. Since the publication of Downs’ (1957) path breaking work, the discussion on the exact motivations of the electorate has continued. In a Downsian world, voting is instrumental: voters try to influence the election outcome and through this future public policy. The most general prediction from this model is that people will not turn out to vote. In the Brussels’ context voting is mandatory. Still actual turnout tends to be significantly lower than 100% (in the election under consideration turnout was 82,7%). Even when the voter turns up, he/she may have little “instrumental reason” to cast a preferential vote. In the Brussels (Belgian) political system there are two specific reasons for this. First, given the strong party discipline, preferential votes for any individual politician are most unlikely to have ‘real’ policy consequences. Second, given the electoral system – where the election outcome is determined mainly through the party votes and the actual representatives assigned by their order on the party list – a vote for, say, the candidate in position 66 is unlikely to have any direct impact. But people *do* give preferential votes, also for politicians in position 66. Such voting may be evidence of expressive voting. Here, preferential voting may be an act of ‘consumption’. One votes for considerations that are relevant to

oneself, such as the satisfaction of expressing a political position, or simply the enjoyment of participating in the political process and casting a vote (Riker and Ordeshook, 1968).

Expressive voting may be candidate-related or not. In the former case the voter votes for a politician with whom he/she identifies. Attributes with which a voter identifies may be unconnected to any policy that is associated with a given electoral outcome. The voter may, for example, identify with the candidate's moral character, good looks or ethnic origin (Brennan and Hamlin, 2000: 136). In a model of candidate-related expressive voting, layout effects (and, for that matter Ballot Position Effects) reflect that voters have either a low benefit from voting for their 'actual' candidate or high search costs from finding his/her name among the 75 names (see Bowler, Donovan and Happ, 1990). Expressive voting may be unrelated to the candidate. Having chosen for a political party, voters may cast preferential votes for the mere enjoyment of that act, perhaps even because they 'feel better' after supporting a (unknown) flesh-and-blood candidate rather than just the more distant and impersonal party. In such a model of non-candidate-related expressive voting, layout effects reflect the 'search' – or rather – 'time' costs (as voters do not search for any particular candidate) of casting preferential votes.

The clear presence of Ballot Layout Effects in our setting is no unambiguous evidence of expressive voting. These effects may also result from the transition to computerised voting.¹⁰ Not being familiar with the (relatively new) computerised vote, voters may have been misguided by the two-step procedure. More precisely, they may have felt like the 'second' voting action is necessary to cast a valid vote and just point the pen at any name without having a particular preference. As voters with low motivation are more likely to be influenced by ballot order (cfr. *supra*), this may lead to (stronger) layout effects (it could also explain why we observe more preferential votes under computerised voting, as mentioned in note 2). With the current information, it is impossible for us to distinguish between the expressive voting and misguided voter explanations. A controlled experiment or a comparison of successive elections could help here as we could expect the degree to which voters are misguided to fall over time when voters become more familiar with the system of computerised voting.

6. Conclusion

Analysing the results of the 1995 elections of the Brussels Region, we find clear evidence of Ballot Layout Effects. In these elections, parties presented the same lists of (maximum 75) candidates to the voter in different layouts: using 1 column (LO-75), using 4 columns (LO-22) and using 5 columns (LO-

15). We find that the share of preferential votes for the individual candidates depends strongly on the format. More precisely, candidates whose names appear at the top or at the bottom of a column obtain a significant electoral advantage.

While demonstrating the existence of Ballot Layout Effects, our analysis also raises a number of related questions for further research. A fundamental micro-question concerns the origin of the effects. Search costs depend critically on how the voter scans the ballot paper. In the literature on Ballot Position Effects, the role of search costs has been considered in relation with the individual voter's decision process and the implied voter rationality. As discussed, it is implicitly assumed that people go through the candidate list from top to bottom.¹¹ Cognitive weariness or satisficing behaviour may then explain Ballot Position Effects. Still, for layout effects to occur a more complex scanning mechanism should be assumed. Indeed, if people would regard candidates one by one as they go down the ballot, there should be no layout effect (at least not based on the same theoretical arguments as given for Ballot Position Effects). The voter should be equally weary when he reaches candidate 66 in the LO-75 or in the LO-22 format. Nevertheless, as we have shown, the candidate on position 66 in the list does receive much more votes in the LO-22 format than in the LO-75 format. Hence, it may be inaccurate to assume that voters go through the entire candidate list from top to bottom. Especially for multi-column lists like the ones under consideration, the voter may scan in a more complex way. Hermans, Van Gils and Baelus (1999) report on a small-scale experiment that analyses the search process for names in a ballot with multi-column layout by 15 subjects (all older than 55). Eye movements are recorded. Subjects are asked to search for a given name (in a three-column layout). The general conclusion is that the search process differs strongly. Most subjects do not go through the list of names systematically from column one to three. Rather, they start searching in the first column, then go to column three or two and then back to column one. Similar random search paths have been observed in an experimental setting by Hung et al. (1993).

More generally, an analysis of Ballot Layout Effects should integrate psychological aspects of visual search into a model that also accounts for the (strategic) way in which political parties order their candidates. A comprehensive model of the preferential vote shares should take into account such supply-side factors. In a Belgian context, vote shares are expected to depend on the actual position in the list. Because of the system of "list votes" that are distributed over candidates in order of their appearance in the list, parties assign top positions to those politicians that they as a party want to send to office. Often, but not always, these are the most popular positions in terms

of predicted preferential votes. This motivation of ordering candidates may be limited to those positions where it could reasonably be expected that politicians can actually be sent to office. The example already given of the VLD (where candidates from position 21 to 73 were listed alphabetically) may reflect this. Matters are complicated further by differences in ‘political culture’ among parties. Some parties (notably the green parties Agalev and Ecolo) typically have a much lower share of personalised electoral propaganda. As a result the vote shares of politicians of these parties may be more evenly distributed among the 75 candidates. In the current empirical work, this effect is neutralised by only making within party pair-wise comparisons for given candidates (at given positions). Further, in a comprehensive model, preferential votes for a candidate may depend on the fact that (s)he is an incumbent politician, on whether the data are for his/her ‘home district’ and on the sociological characteristics of the electorate. Modelling all these aspects is the subject of current research by the authors.

Notes

1. We assume that there has been no strategic use of (possible) layout effects by the political parties. In the 2000 municipal elections, casual evidence exists that strategic behaviour has become a realistic element in Belgian politics. Previous to 2000, however, no such evidence exists. Moreover, in the Brussels 1995 setting strategic use of layout effects would have been complicated by the organisational characteristics of computerised voting (notably the fact that for one and the same election different layouts were used in parallel).
2. For example, the introduction of computerised voting increased the use of preferential votes in general: on average, voters expressed 1.28 preferential votes while voting by computer and only 0.87 when voting manually.
3. For those layouts that were used in more than one district (notably for LO-22 and LO-75) the vote shares correspond with the unweighted average in the relevant districts.
4. An interesting case supporting the assumption of “no strategic positioning” is found in the election result of the VLD (Flemish liberal party). This party classified its candidates from position 21 to 73 in alphabetical order. Nevertheless among those, 10 out of the 12 politicians in critical positions did obtain more votes in the layouts where their name was at the top or the bottom of a list compared to the single column layout LO-75.
5. For completeness, and also to account for possible non-layout effects, we investigated changes in preferential votes for politicians in non-critical positions too (results upon request). This exercise demonstrates that political gains for some candidates in non-critical positions are also significant. However, gains for politicians in critical positions are by far more significant. For example, on comparing LO-22 with LO-75, we find four cases where the political gain was significant at the 0.1% level: these were all critical positions (22, 23, 44 and 66).
6. For example, to compare the bottom positions in LO-22 with LO-75 (last line in Table A.2), we calculated for each politician with position 22, 44 or 66 the difference of their vote shares in LO-22 districts on the one hand and LO-75 districts on the other.

7. The first named layout in the first column refers to the critical positions. For example, for top positions, 'LO-15 versus LO-22' refers to positions 16, 31, 46 and 61 while 'LO-22 versus LO-15' refers to positions 23 and 67 (45 has been left out because of the overlap, see above). This also explains the difference in the number of observations. In the first situation we have 4×12 (where 12 is the number of political parties) cases; in the second situation we only have 24 cases.
8. While it is the case that we have in general fewer cases for the LO-22, it should not be forgotten that the observations for LO-15 refer to preferential vote shares obtained in only one district (compared to the 3 LO-22 districts). As such, the LO-22 results may be more "robust".
9. Namely the candidate with position 15 on the list of the PS, the French speaking socialist party. Still, even there it is very unlikely that the layout effect was responsible for her election (if only because the LO-15 was applied only in 1 out of 8 districts and as the average advantage for candidates in position 15 in LO-15 compared to LO-75 districts is "only" 14.8 percent of their LO-75 score).
10. We are grateful to an anonymous referee for pointing this out.
11. Experimental evidence supporting such a systematic visual search pattern is provided by Neisser (1964). Scott (1993), however, discusses results revealing random search processes.

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Appendix

Table A.1. Multi column (LO-15 & LO-22) versus single column (LO-75)

	Average gain	t-statistic
<i>Top positions</i>		
LO-15 & LO-22 vs. LO-75	0.35	5.05**
<i>Bottom positions</i>		
LO-15 & LO-22 vs. LO-75	0.58	6.52**

* = significant at 5%; ** = significant at 1%.

Table A.2. Pair-wise comparison of layouts

	Average gain	t-statistic
<i>Top positions</i>		
LO-15 versus LO-22	0.17	2,26**
LO-15 versus LO-75	0.20	2,18**
LO-22 versus LO-15	0.45	2,99**
LO-22 versus LO-75	0.54	5,68**
<i>Bottom positions</i>		
LO-15 versus LO-22	0.22	1,55
LO-15 versus LO-75	0.25	2,73**
LO-22 versus LO-15	0.90	6,47**
LO-22 versus LO-75	1.02	7,38**

* = significant at 5%; ** = significant at 1%.