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## The geography of party replacement in Italy, 1987–1996

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### Abstract

With the disappearance of the two largest political parties and the emergence of several new ones over the last decade, a new electoral map of Italy has emerged. We explore how these ongoing changes to party politics in Italy were manifest spatially between 1987 and 1996. In particular, the geographical aspects of party replacement are examined in central and northern Italy. First, the parties that have succeeded the Italian Communist Party (PCI) are examined in Tuscany, where the Italian left has historically enjoyed high levels of electoral support. Second, we look at how the regionalist Northern League has replaced the Christian Democratic Party (DC) in the Veneto. Exploratory spatial data analyses (ESDA), and in particular, local indicators of spatial autocorrelation (LISA), indicate that the processes and patterns of replacement are more complex than the simple substitution of one party with another in both of these regions, and illustrate the need to frame geographically electoral change in Italy. © 2001 Published by Elsevier Science Ltd.

### Introduction

Periodic or episodic realignment of political parties has long been interpreted in geographic terms. New political coalitions weaving together groups located in different places and regions produce new electoral alignments. Burnham's (1967) study of American party politics over time reveals no less than five successive national party systems. This cyclical pattern of medium-term continuity interrupted by short periods of dramatic change (marked by 'realigning elections') has also been noted for other countries, though none has had either as long a series of elections or such

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a limited number of effective national political parties as has the United States. In these other cases, such as Britain, France and Italy, another scenario has been much more important than American-style realignment between regionally-based coalitions of interests. This is the replacement of one party by others. It can take a number of geographical forms.

In one situation, where there are several other parties close to a particular point on the political spectrum, one takes votes from the other and grows at its expense even as the other continues to exist. This is what happened to both the Italian Socialist Party in the 1950s as it lost votes to the Communist Party and, in reverse, what happened in France in the 1970s when the Socialists came back from oblivion, under the leadership of Mitterrand, to marginalize the French Communist Party. In each case the advancing party used a regional base to reach out into traditionally more hostile territory. The most famous twentieth century example in the English-speaking world is probably the emergence of the Labour Party in Britain in the 1920s at the expense of the Liberals (e.g., see Duverger, 1964; Pelling, 1967; Douglas, 1971). This involved a march from urban-industrial outposts into marginal constituencies previously represented by Liberals, helped along by defections of sitting members to the insurgent party. Splits in the Liberal Party undoubtedly hastened this replacement.

In another situation, an existing system of parties disintegrates and new parties emerge across the political spectrum as a new party system is created. This latter example of replacement is what happened in France in 1962 as many of the parties of the Fourth Republic, and above all the Radicals, disappeared and were replaced by new ones. This is also what happened in Italy between 1987 and 1996 when the Italian Communists split into the Democratic Party of the Left (PDS) and the Refounded Communists (RC), the Christian Democrats (DC) and Italian Socialists (PSI), which together had dominated Italian governments since the 1960s, disappeared, and when many other smaller parties of the center vanished. This extinction–replacement pattern resulted from both ideological crisis with the end of the cold war and the tendency of the strong proportional representation element in the Italian electoral system before 1992 and its reduced impact after the 1993 reform (1/4 of all seats decided proportionally) to encourage the formation of smaller parties.

The Italian party system since World War II exhibited a strong regional pattern of support for different political parties. This reflects in part historical differences in local societies, the origins of political parties in different places, and the economic attributes of different localities (e.g., Trigilia, 1986; Baccetti, 1997; Shin, 2001; Lucani, 1989). But it also illustrates the ease with which parties with regional bases of support can prosper under proportional representation (Irvine, 1988). From the late 1940s through the 1970s no two regions of Italy showed greater specificity with respect to dominance by particular political parties than the Northeast and the Center, the former with DC and the latter with the PCI. Indeed, the extent to which the Catholic party (DC) dominated the Northeast and the Communist party (the PCI) the Center led them to be labeled, respectively, as the “white” and “red” zones.

Though these regional hegemonies showed signs of fraying before the collapse of the party system in 1992, the regional dominance exerted by the two parties remained substantial until the end. What has replaced them, however, is quite different in the

two areas. In the northeast, new parties without a religious or ideological link to what they have replaced, in particular the regionalist Northern League and the new center-right party *Forza Italia!*, have more or less taken the place of DC as the main parties. This is an entirely new political configuration for this area of Italy. In the second case, two new parties emerged out of the party that disappeared: the Democratic Party of the Left (PDS) and the Refounded Communists (RC). This can be thought of as a split in an existing party more than the replacement of an old party by entirely new ones, but it is important to emphasize that neither PDS nor RC is a simple substitute for the old PCI.

We examine the process of party replacement and how it is manifest spatially in northern and central Italy, partly because the process was different in different regions, but also because in the north this replacement involved a regional party restricted to the north, the Northern League. The geography of replacement in central and southern Italy, though more complex than that found in the north, is not that different in process from what happened in France in the early 1960s; with reformulation and renaming, the political menu of choice appears to remain largely the same. Several parties, including offshoots from the DC and PCI, such as *Forza Italia!* (FI) under the leadership of Italian media-tycoon Silvio Berlusconi and Gianfranco Fini's post-fascist National Alliance (AN), all vie to replace the old parties in a fluid and volatile situation in which party identification is very low in some places, but remarkably stable in others.

After presenting a typology of geographies of party replacement, our attention turns to how the Democratic Party of the Left (PDS) and Refounded Communists (RC) replaced the Italian Communists (PCI) in the central region of Tuscany, and how the Northern League (LN) has replaced the Christian Democrats (DC) as the dominant party in the northern region of the Veneto (see Fig. 1). These two regions were selected because the PCI and DC were historically dominant in each respective region until the mid- to late-1980s, and likewise the process of replacement in Tuscany and the Veneto was dominated, for the most part, by one 'new' party (i.e., the PDS is considered the primary replacement for the PCI, and the LN arguably replaced the DC). Exploratory spatial data analyses (ESDA), and in particular local indicators of spatial autocorrelation (LISA) are used to evaluate the geographic dimensions of party replacement in these two regions (Anselin, 1995a). Ultimately, we hope that this exploratory investigation into the geography of party replacement can guide subsequent analyses of electoral competition in Italy and other democracies, as well as illustrate the theoretical uses of quantitative techniques applied to voting studies.

### A typology of geographies of party replacement

One party replacing another one in electoral competition can be thought of in several ways. Perhaps the most common meaning of replacement is akin to *substitution* where the new party takes over all or a large share of the votes of a previous party that has disappeared. This is the quantitative electoral sense in which the term is used by most commentators. The electoral success of both the Northern League



Fig. 1. The regions and provinces of study.

and the Democratic Party of the Left has been viewed widely in terms of substitution, the former replacing the Christian Democrats in the north of Italy and the latter replacing the Italian Communist Party throughout the Mediterranean country. In another related understanding, however, replacement involves a number of parties *splitting* the votes of an old party among them. This is the consensus position on what happened to the Christian Democrat vote in central and southern Italy where *Forza Italia!*, the post-fascist National Alliance and a good number of smaller parties battled over old DC votes.

Finally, the collapse or disappearance of one party may create an ideological or socio-political vacuum that allows an existing, opportunistic party to move in and colonize this void. This *colonization* process does not necessarily involve the new party taking over the old vote as much as the new party providing a new voice for new voters, elements and interests that were increasingly alienated from the old party even before its disappearance. In this instance, replacement is just as much a reflection of the older party's deficiencies as it is the newer party's strengths. We contend that this latter conception of replacement parallels more what happened throughout northern Italy over the last decade than the simple substitution of the League for the Christian Democratic Party.

The term replacement draws attention to three important geographical contingencies when thinking about how new parties arise as old ones disappear. First, electoral choices can only be understood in relation to the places in which political choices are exercised. This means, typically, local electoral districts or constituencies (Agnew, 1987). The composition of candidate lists, the strength of party organiza-

182 tions, previous vote choices, campaign impacts (e.g., visits by party leaders, attention  
183 to local issues, etc.) and spatial variation in the intensity of preference for specific  
184 parties and candidates all frame and color the ways in which electoral choices are  
185 made. The almost complete absence of reference to such factors in the political  
186 science literature is more a product of that literature's bias towards interpreting elec-  
187 tions in terms of national census categories and national survey samples than the  
188 true absence of such influences from the electoral process (but see, for example,  
189 Huckfeldt, Sprague, & Levine, 2000). At the same time, old parties do not simply  
190 disappear, nor do new parties emerge, without reason. Old parties are often no longer  
191 in tune with local social mores, interests and trends, while new ones may attempt  
192 to capitalize on the old party's failure to change with the times. Such new issues as  
193 globalization, foreign immigration and women's rights create new popular constitu-  
194 encies both pro and con, dividing local populations in new ways but always in the  
195 context of previous party affiliations (e.g., on the recent Italian experience, see Bull,  
196 1997; and Beirich & Woods, 2000). The persistence of older parties in elections can  
197 often be attributed more to inertia than to continued enthusiasm from a popular  
198 support base.

199 Second, parties are not simply electoral vehicles, but should be seen as intermedi-  
200 aries between state and society, channeling resources from center to periphery and  
201 rewarding some social and territorial interests at the expense of others. In this sense,  
202 the distinction between mass and patronage parties is a false dichotomy; all parties  
203 are patronage parties. Judgments are made by voters about how effective the party  
204 is in "delivering the goods", and whether or not we (in our place) are being rewarded  
205 more or less than they (in their place). Much of the geography of Italian party politics  
206 is a result of who gets what, when and where more than a reflection of the underlying  
207 or foundational social cleavages that have a geographic bias to them. By the 1970s,  
208 all Italian political parties were more or less parts of a system referred to as *partitoc-*  
209 *razia*, a party-based political economy in which large parts of the private sector, in  
210 addition to the huge Italian public sector, depended upon party affiliations for jobs,  
211 favors and financial rewards. This included the Communists in the central regions  
212 of Italy to a certain extent, but at a different level. Excluded from the fruits of central  
213 government, and certainly less corrupt than the DC and PSI of national government,  
214 the Italian Communists successfully created and reproduced their own version of a  
215 party-based economy where they exercised control over municipal, provincial and  
216 regional government.

217 The third and final contingency is that new parties can have new and completely  
218 different symbolic, interest and strategy repertoires from the parties that they replace  
219 (Agnew, 1987; 1997). In particular, they can appeal to new territorial formulations  
220 of the dilemmas that the old party dealt with solely through the allocation of public  
221 resources. Ethnic and regionalist parties are the most obvious exponents of such a  
222 territorialized approach. Typically, such parties focus on relative deprivations or a  
223 sense of resentment at the relative success of other regions in commanding state  
224 resources or acquiring more than an average per capita share of national revenues.  
225 Both nationalistic parties desiring the expulsion of foreigners and the installation of  
226 protectionist trade barriers and liberal parties desiring the removal of such barriers

are also engaged in territorial reframing. While the Northern League clearly exhibits such a territorial reframing in the Veneto, the PDS and RC continue to benefit from the territorial and political legacies of the PCI in Tuscany. Our attention now turns to how party replacement can be manifest in spatial–statistical terms.

### Exploring the geography of party replacement with local indicators of spatial autocorrelation

The ability to distinguish and compare how votes are replaced (i.e., substituted, split and colonized) across a democracy not only informs our understanding of electoral change, political competition and party change, but underscores the need to recognize how politics is framed geographically. Several methods exist for examining electoral change, but most of these techniques tend to diminish the import of geography, which we contend enhances explanations of political change. One of the better known methods used to account for electoral change, in terms of flows of votes, employs Goodman's (1959) ecological regression. Though estimating the flow of votes between parties can be effective at local scales of analysis, aggregation across scales of analysis requires the introduction of assumptions, for example, that voter responses are consistent and homogenous across a democracy, which effectively throw out the geography of electoral change (for details, see Agnew 1994). Dogan and Derivry (1988) map and compare French election returns between elections, but as elsewhere, geography is merely the backdrop for change and not used to explain change or to frame politics.

We illustrate how two geographic effects can inform studies of political transformation and electoral change. The first effect, spatial dependence, refers to the geographic concentration, similarity or clustering of a particular phenomenon, such as votes for the Northern League or PDS within a specified area. Premised upon the idea that most places are interdependent, and that interactions of varying degrees and types occur between places, proximate locations are likely to have more in common with each other than are places distant from one another (Tobler, 1970). The processes of spatial diffusion and contagion are frequently manifest as spatial dependence within quantitative data, which within the context of this analysis may result from shared or similar information sources, local social networks or even the spatial organization of a political party. The second effect is spatial heterogeneity, or the significant geographic variation of a phenomenon. The same influences captured by spatial dependence can arguably account for this second geographic effect, but the theoretical argument underlying the geographic variation of voting is that voters mediate social, political and economic processes and influences differently in different places. For example, Shin (2001a) illustrates how PDS party organization and activities vary from place to place, and how such variations coincide with PDS support or the lack thereof. Such differences may also be related to the electoral performance of the party in a previous election or local economic conditions.

Exploration into the spatial structure of party replacement in Tuscany and the Veneto begins with the detection of spatial dependence, or the geographic concen-

tration of electoral support for the Democratic Party of the Left (PDS) or the Northern League (LN), within the areas of study. Comparisons between levels of spatial autocorrelation for the old party that was replaced and the new party that emerged provide preliminary insights into the nature of the geography of party replacement. Recall that Tuscany and the Veneto were selected because the process of replacement was more or less dominated by only one ‘new’ party in each region, but the origins of each party are quite different. This comparison illustrates the need to identify geographic differences in electoral change, and highlights the fact that replacement connotes diverse sets of processes for different parties as well as for different places. Similar levels of spatial dependence between the old and new parties suggest that the new party inherited some of the geographic bases of support, or overlaps the social, political and geographic milieu of the old party. Dissimilar levels of spatial dependence indicate the possibility of a change in the electoral geography of the region, marked by the disappearance of one party and the emergence of another. In this case, the new party may occupy or colonize completely different social, political, economic and geographic spaces and places, and may rely upon a different set of information networks or spatial organization.

As a global, or overall, indicator of spatial autocorrelation, Moran’s *I* is calculated for the political parties of interest in Tuscany and the Veneto over the nine year period, 1987 to 1996. It was during this period that the Italian political system was transformed in the wake of investigations into government corruption, and several prominent parties and political figures disappeared while new ones emerged (for details, see Bartolini & D’Alimonte 1995; Katz & Ignazi, 1996; McCarthy, 1997). Moran’s *I* provides an indication of the relationship between a vector of observed values,  $\mathbf{y}$ , and a weighted average of values that neighbor, or are contiguous to,  $\mathbf{y}$ . The latter is often referred to as the ‘spatial lag of  $\mathbf{y}$ ’, and is expressed as  $\mathbf{W}\mathbf{y}$ , where  $\mathbf{W}$  stands for the spatial weights matrix.

The spatial weights matrix,  $\mathbf{W}$ , summarizes the join characteristics, or linkages, between each observation. Geographical information systems (GIS) are frequently used to fill spatial weights matrices on the basis of simple contiguity, distance or length of shared borders. In this study, the simple contiguities between Italian municipalities in the regions of study are used. Two formats of spatial weights matrices, binary and row-standardized, can be used to calculate Moran’s *I*. In a binary weights matrix, a ‘one’ (1) indicates contiguous, or touching, cases and a ‘zero’ (0) indicates non-contiguous units of observation. Row-standardized form divides the row elements,  $w_{ij}$ , of a binary weights matrix by the total number of joins in that row,  $\sum_j w_{ij}$ , so that each row sum is equal to one (1). Row-standardization corresponds to a form of spatial smoothing, which simplifies the interpretation of the spatial lag (Anselin, 1992). The row-standardized spatial lag of a variable is an average of surrounding observations and is central to most measures of spatial dependence (for additional details, see Anselin, 1995a).

When implementing a row-standardized spatial weights matrix, Moran’s *I* can formally be expressed in matrix notation as:

$$I = \frac{N \mathbf{y}' \mathbf{W} \mathbf{y}}{S_0 \mathbf{y}' \mathbf{y}} \quad (1)$$

where  $N$  is the number of observations,  $S_0$  is the sum of all elements in the spatial weights matrix, the vector of observations is  $y$ , and  $Wy$  is the spatial lag of  $y$ . A statistically significant, positive value of Moran's  $I$  indicates the presence of spatial dependence, and a significant negative value suggests a chessboard pattern of spatial dissimilarity that is rare in spatially referenced data. Two significance tests exist for Moran's  $I$ , one is based upon the normal distribution and the other is based upon the randomization assumption. Each use the calculated  $z$ -score, or standard deviate, from the value  $I$ , the expected value of  $I$  and its standard deviation (for details, see Cliff & Ord, 1981; Anselin, 1988). Due to the relatively large number of observations within Tuscany ( $N=287$ ) and the Veneto ( $N=582$ ), there is little difference between results from each type of significance test for any given vector.

Table 1 reports descriptive statistics for the parties and years of particular interest in each respective region, and are provided as points of reference for the following spatial analyses of party replacement.

Table 2 provides Moran's  $I$  statistics for the parties that were replaced (i.e., the Italian Communist Party (PCI) and the Christian Democrats (DC)) and for those that arguably succeeded them in each respective region of study (i.e., the Democratic Party of the Left (PDS) and the Refounded Communists (RC) in Tuscany, and the Northern League (LN) in the Veneto). Note that the DC and LN competed against each other until the 1994 election when the former party disintegrated, therefore, pre-replacement Moran's  $I$  scores for both parties are provided for comparison.

What is most striking about Table 2 are the remarkably high  $z$ -values returned by all parties, and in particular those for the Northern League in the Veneto. Note that a Moran's  $I$  score of 1.0 indicates perfect spatial autocorrelation, or that each observation can effectively be predicted by the average of surrounding observations. During the replacement phases, the period between 1987 and 1992 for the PCI to PDS/RC and the period between 1992 and 1994 for the DC to LN, Moran's  $I$  slightly increases. Scores for both the PDS and LN are also above those of the party that they replaced in each and every election. Only the Refounded Communists in Tuscany exhibit lower levels of spatial autocorrelation, which may be related to their

Table 1

Descriptive statistics for the PCI, PDS and RC in Tuscany, and the DC and LN in the Veneto, 1987–1996

<i>Tuscany</i>	Mean	Variance	Minimum	Maximum
PCI 1987	43.70	150.16	12.70	71.60
PDS+RC 1992	39.43	157.48	10.76	66.63
PDS 1996	34.43	108.57	10.51	58.81
RC 1996	12.51	9.34	3.20	27.85
<i>The Veneto</i>				
DC 1992	36.09	80.11	15.04	66.67
LN 1992	18.90	51.72	4.29	53.82
LN 1994	24.55	81.68	4.19	56.58
LN 1996	34.17	153.33	5.77	68.96

Table 2

Moran's I statistics (and associated z-values) for old and new parties in Tuscany and the Veneto, 1987 – 1996

Tuscany		The Veneto	
Old Party		Old Party	
PCI 1987	0.642 (17.25)	DC 1987	0.651 (25.96)
		DC 1992	0.524 (20.90)
New Parties		New Parties	
PDS 1992	0.674 (18.10)	LN 1987	0.588 (23.46)
PDS 1994	0.717 (19.25)	LN 1992	0.775 (30.90)
PDS 1996	0.698 (18.75)	LN 1994	0.837 (33.36)
RC 1992	0.352 (9.50)	LN 1996	0.828 (32.99)
RC 1994	0.283 (7.66)		
RC 1996	0.273 (7.40)		
PDS+RC 1992	0.670 (18.01)		
PDS+RC 1994	0.686 (18.43)		
PDS+RC 1996	0.647 (17.40)		

smaller size and smaller vote share when compared to the PDS. The RC splintered-off the PDS immediately following the latter's creation because members of this group felt that the new incarnation of the PCI was compromising the revolutionary and radical ideals of communism (Weinberg, 1995: 84-86). The similarities between Moran's I scores for the PCI in 1987 and the aggregated election returns of the PDS and RC are not necessarily surprising given the overlap of the socio-territorial milieu discussed previously. These results suggest that the PDS in Tuscany inherited many of the territorial bastions of leftist support from the disappeared PCI, but that LN support is more geographically concentrated than that of the disappeared DC in the Veneto.

One of the interesting features of Moran's I, when a row-standardized spatial weights matrix and a standardized vector of observations are used, is that the calculated value I is the slope coefficient of a linear regression of  $\mathbf{W}\mathbf{y}$  on  $\mathbf{y}$  because  $S_0=N$  (Anselin, 1995a; 1995b). Both the OLS estimate and Moran's I are formally expressed below for comparison.

$$\hat{\beta} = \frac{y'x}{x'x} \text{ for OLS,} \quad (2)$$

$$I = \frac{y'W\mathbf{y}}{y'y} \quad (3)$$

This permits the visualization of the linear association between pairs of values, of  $\mathbf{W}\mathbf{y}$  on  $\mathbf{y}$ , as a scatterplot. The linear regression line, with a slope equivalent to Moran's I, can be superimposed on the plot to provide a general indicator of the degree of fit. Values falling along a diagonal with a slope of one (i.e.,  $m=1$ ), passing through the origin, indicate perfect spatial association. Because the form of Moran's I conforms with the linear regression model, diagnostic tests for outliers, leverage

points and the classical assumptions of regression analysis can also be also out (Anselin, 1995a). This technique can be used to visualize the individual components of Moran's I, thus making it a local indicator of spatial association, or 'LISA' (for further details, see Anselin, 1995a).

Figure 2 aids in the interpretation of what Anselin (1995a) refers to as a Moran scatterplot. The scatterplot of individual components of Moran's I, measured in standard deviations, permits the visualization of the 'contributions' that each observation makes to the calculated statistic. The four quadrants represent the four types of spatial association that exist:

- *Quadrant I*—high values of  $y$  surrounded by similarly high values;
- *Quadrant II*—low values of  $y$  surrounded by dissimilarly high values;
- *Quadrant III*—low values of  $y$  surrounded by similarly low values; and,
- *Quadrant IV*—high values of  $y$  surrounded by dissimilarly low values.

Within the scope of this paper, the Moran scatterplot provides insights into the geographic structure of party replacement, from spatial–structural stability within quadrants I and III, to structural instability, or changing patterns of dependence across the regions of study, between quadrants II and IV. The very high Moran's I scores reported in Table 1 indicate that most observations will exhibit positive spatial dependence, or the geographic clustering of similarly high and similarly low values (i.e., quadrants I and III, respectively). Influential observations can be identified for their contributions, or leverage, by means of the two-sigma rule, or those observations

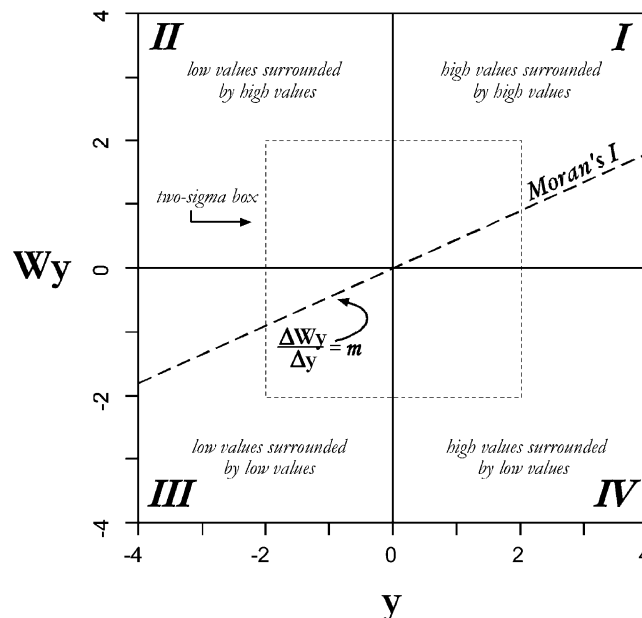


Fig. 2. Moran scatterplot interpretation guide.

falling more than two standard deviations from the origin. A two-sigma box is superimposed within the plot, and standardized observations falling outside of the box are considered to be outliers, or extreme observations that may merit further examination.

Figure 3a contains Moran's scatterplots for the PCI in 1987, the aggregated returns of the PDS and RC in 1992, which was the first year in which these two parties appeared on the ballot as 'replacements' for the PCI, and separate plots for the PDS and RC using election returns from the last general elections held in 1996 for the region of Tuscany. In Fig. 3b, scatterplots for both the DC and LN in the Veneto are provided in 1992 because these parties competed against each other up to 1994, the last year in which the DC appeared on the ballot. Subsequent plots for the LN are provided to illustrate the spatial-structural stability of support for this new party, and to compare them with the DC in 1992.

Looking at the set of scatterplots for the Italian left in Tuscany, the similarity between the PCI 1987, PDS+RC 1992 and PDS 1996 plots is apparent. The stability of spatial dependence in Tuscany is not only visually apparent, but in quantitative terms 78 percent or more of the observations for the three variables identified above reside in either quadrants I or III over the period of study, and since the disappearance of the PCI in 1987, the number of cases in quadrant I barely increased from 139 to 141. The broader dispersion of individual points around the fitted Moran's I regression line for the RC, however, indicates a greater mix of spatial-structural stability and instability than is found in the other plots. For this last plot, approximately 68 percent of the observations are positively correlated with their neighbors, with 88 cases found in quadrant I.

The scatterplots for the DC and LN provided in Fig. 3b also illustrate clearly the stability of spatial dependence in the Veneto. Three items of particular interest

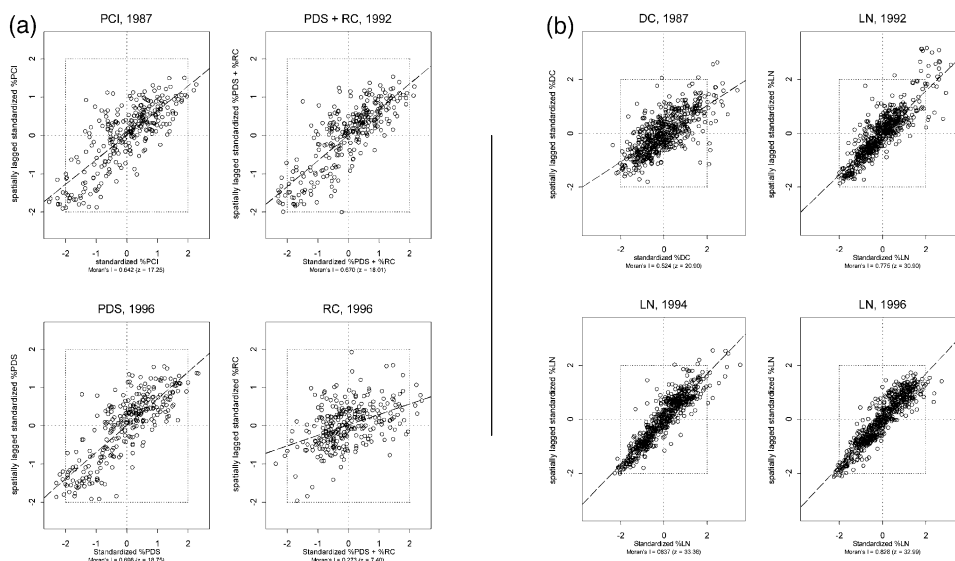


Fig. 3. Moran's scatterplots for the Italian left, Christian Democrats and Northern League, 1987-1996.

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emerge from this set of plots. First, the scatterplots for the LN are much more condensed, or less dispersed, than that for the DC, and illustrate clearly how the Northern League is a territorially based party. Specifically, higher than average support for the League in the Veneto tends to cluster, as does below average support. Second, in the 1992 scatterplot for the LN, a noticeably high number of observations fall outside of the two-sigma box in quadrant I. Under any other circumstance, the influence that these observations have upon the global indicator of spatial dependence would merit further investigation, but the even higher Moran's I scores for the LN in 1994 and 1996 overshadow their influence. Finally, the stability of spatial dependence for the Northern League within the Veneto is extraordinary; 86 percent of the 582 observations were in either quadrant I or III in 1992, this proportion increases to 89 percent in 1994 and in 1996, 92 percent, or 536 of the 582 cases exhibit some form of positive spatial autocorrelation, 269 of which are situated in quadrant I.

The visual comparisons of Moran's scatterplots for election years reveal the spatial-structural stability of support for the parties that disappeared and those that arguably replaced them in Tuscany and the Veneto. The concept of replacement, however, implies that a more fundamental relationship exists between old and new parties in the temporal domain. In an attempt to visualize this relationship, the components of Moran's I are modified slightly through substitution. Since the spatial relationships summarized by the row-standardized spatial weights matrix,  $\mathbf{W}$ , do not change between elections and parties, substituting the numerator,  $\mathbf{W}\mathbf{y}$ , with  $\mathbf{W}\mathbf{y}_{t-k}$ , where  $k$  is equal to the years between elections, while using the denominator at election  $t$ , a general indicator of spatial-temporal dependence for  $\mathbf{y}$  can be calculated. Furthermore, substituting  $\mathbf{y}$  with  $\mathbf{z}$ , where  $\mathbf{z}$  is a vector of standardized values for the disappeared party, provides a way to measure the linear relationship between the spatial lag of  $\mathbf{z}$  in the last election it appeared on the ballot and the new party,  $\mathbf{y}$ , in the most recent election. Within the scope of this study,  $\mathbf{W}\mathbf{z}_{t-k}$ , is the spatial-temporal lag of  $\mathbf{z}$ , the party that  $\mathbf{y}$  replaced, and the new form of Moran's I, denoted  $\tilde{I}$ , that measures spatial-temporal dependence is expressed:

$$\tilde{I} = \frac{\mathbf{z}'_{t-k} \mathbf{W} \mathbf{z}_{t-k}}{\mathbf{y}'_t \mathbf{y}_t} \quad (4)$$

Though the interpretation of this measure of spatial-temporal dependence is slightly different from Moran's I, its functional form is equivalent to it. As this is an extension of an already exploratory technique, a general but arbitrary rule of comparable means for assessing the two related vectors is suggested (i.e., the mean of the spatial-temporal lag vector is within one standard deviation of the non-lagged vector, and vice versa). If the weights matrix is row-standardized, and if the number of cases remains the same between years of comparison, the expected value of  $\tilde{I}$  and its associated variance for vectors  $\mathbf{y}$  and  $\mathbf{z}$  are identical to that for Moran's I. The slope of the regression of  $\mathbf{W}\mathbf{z}_{t-k}$  on  $\mathbf{y}$ , therefore, approximates Moran's I in both the spatial and temporal domains, and its pseudo-significance can be assessed by calculating the standardized  $z$ -value. Table 3 reports standard Moran's I scores and  $\tilde{I}$  scores for the parties of interest and different election years in Tuscany and the Veneto.

Table 3  
Moran's I and  $\tilde{I}$  scores calculated using identified spatial weights matrices

Tuscany	Wy	W(PCI 1987)	Wyt-I
PCI 1987	0.642 (17.25)	–	–
PDS 1992	0.674 (18.10)	0.639 (17.16)	–
PDS 1994	0.717 (19.25)	0.662 (17.78)	0.692 (18.58)
PDS 1996	0.698 (18.75)	0.649 (17.43)	0.704 (18.90)
RC 1992	0.352 (9.50)	0.402 (10.86)	–
RC 1994	0.283 (7.66)	0.257 (6.95)	0.240 (6.50)
RC 1996	0.273 (7.40)	0.055 (1.55)	0.231 (6.26)
PDS + RC 1992	0.670 (18.01)	0.650 (17.46)	–
PDS + RC 1994	0.686 (18.43)	0.651 (17.49)	0.670 (17.99)
PDS + RC 1996	0.647 (17.40)	0.622 (16.55)	0.664 (17.83)
The Veneto	Wy	W(DC 1992)	Wyt-I
DC1992	0.524 (20.90)	–	–
LN 1992	0.775 (30.90)	–	–
LN 1994	0.837 (33.36)	0.099 (4.02)	0.718 (28.69)
LN 1996	0.828 (32.99)	0.103 (4.18)	0.821 (32.79)

The first column of Table 3 reports the standard Moran's I score as a benchmark for comparisons with the second column, which is the  $\tilde{I}$  score using the spatial weights matrix of the last election in which the old party appeared on the ballot (i.e., 1987 for the PCI in Tuscany and 1992 for the DC in the Veneto). This score can be thought of as an indicator of the spatial-temporal staying power of PCI and DC legacies in Tuscany and the Veneto, respectively. The final column reports the  $\tilde{I}$  scores using the spatial lag of a party during the last election,  $y_{t-k}$ . Note that for illustrative purposes, the suggested rule of comparable means for some vectors is violated.

Four features of interest emerge in Table 3. First, the spatial-temporal legacy of the PCI is quite remarkable as  $\tilde{I}$  scores for the PDS and the PDS+RC in all years do not deviate from the original Moran's I score for the PCI in 1987 more than  $\pm 0.020$ . Second, RC appears to be breaking from the spatial-temporal legacies of the PCI, as the  $\tilde{I}$  scores exhibit marked decreases in each post-1987 election. The RC, however, was never considered a replacement or substitute for the PCI, it more appropriately is described as a party competing for a small piece of the former PCI's share of votes. Third, in the Veneto, Northern League support is only marginally related to former-DC support in surrounding areas. Though the  $\tilde{I}$  scores are statistically significant, they are noticeably less in magnitude than those found in Tuscany. Finally, in the last column it is interesting to note, though not entirely surprising, how similar  $\tilde{I}$  scores are between party support at election  $t$  and at election  $t-1$ , i.e., the spatial-temporal lag for the specified party.

Because standardized vectors are used to calculate  $\tilde{I}$ , pairs of values can be viewed by means of a scatterplot. Interpretation of the scatterplot is analogous to that of the

standard Moran scatterplot, with the addition of the temporal element, thus making it a local indicator of spatial–temporal autocorrelation, or ‘LISTA’. The underlying exploratory question that guides the following sets of plots is, “To what extent is the new party’s support related to the historic and geographic support of the party it replaced”? Observations falling in either quadrant I or III indicate that historically high or historically low levels of support for the replaced party in surrounding communities are related to the currently high and low levels of support for the newer, or replacement, party. Cases falling in either of these two quadrants indicate a certain degree of stability in both the spatial and temporal domains, and those cases in quadrant I suggest that the newer party substituted directly for the older party, and is drawing votes from the same or similar geographic bastions of support of the disappeared party.

Observations falling into quadrants II indicate that historically high levels of support for the old party in nearby municipalities are accompanied by below average support for the new party, and in quadrant IV the converse is occurring, historically low levels of support for the old party within the local area are related to higher levels for the new, replacement party. The former case suggests that the new party is a poor choice among other replacements or is having difficulties colonizing the electoral geographic void left by the older party, and the latter suggests that the new party is appealing to a new segment of voters, and perhaps shaping a new electoral geography for itself. Particular attention is given to the spatial–temporal, linear relationship between the PCI in 1987 and the PDS in 1996 within Tuscany, and the relationship between the DC in 1992 and the LN in 1996 within the Veneto in Fig. 4.

At the regional level, the spatial-temporal process of replacement is very different in Tuscany when compared to that in the Veneto. The plot on the left confirms that the PDS is the primary replacement of the PCI, probably drawing support from the PCI’s long-established electoral strongholds. Historically above average support for the PCI in surrounding communities is related to below average support (i.e., quadrant II) for the PDS in only 37 of the 287 cases. Within the Veneto plot on the

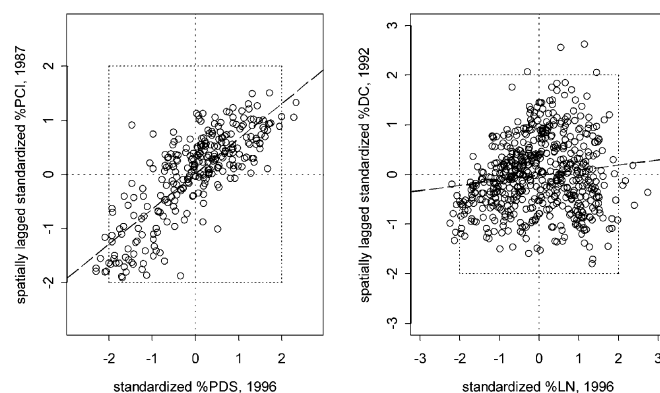


Fig. 4. Local indicators of spatial–temporal autocorrelation (LISTA) scatterplots between the PCI 1987 and PDS 1996 in Tuscany (left) and the DC 1992 and the LN 1996 (right).

right, the number of observations is distributed fairly evenly between quadrants. The patterns, or lack thereof, as well as the weak  $\bar{I}$  score indicate that in many places, LN support is positively related to historic levels of DC support (54 percent of cases), but in other areas, the relationship is negative. Specifically, some areas that once supported the DC do not seem to support the LN at comparable levels, and in some areas where support for the DC was relatively weak, the LN has made notable inroads. This suggests that in some places in the Veneto, the LN did substitute for the DC, but in others that processes of colonization and de-colonization of former-DC territory may have occurred.

The spatial–temporal instability and inconsistency of party replacement throughout the Veneto at the municipal level highlights the need to reconsider issues regarding the spatial resolution of data and geographic scales of analysis. It is important to remember that summary measures of spatial data, such as the mean level of DC support in the provinces of the Veneto, may conceal patterns and trends that are only visible at a finer spatial resolution (e.g., municipal levels). Furthermore, on the one hand, such summary statistics fail to capture and reveal the geographic qualities, patterns and linkages that may exist between individual observations that contribute to the summary measure. On the other hand, too fine a resolution precludes the discovery of more general patterns or trends.

Within the scope of the analysis thus far, types of replacement are not distinguishable at the provincial level, but at the municipal level patterns and trends are unclear in the Veneto and very difficult to pinpoint. Recognizing that many Italian political parties, the PDS and LN included, maintain provincial headquarters or provincial federations provides a possible alternative to looking exclusively at one scale of analysis or another. Hine (1993: 111) notes,

. . . the provincial party organization has traditionally been the most important tier [of the party] below the national level, since it generally controls, either directly or through special committee, the party's representatives in the provincial capital, and plays a major role in designating candidates in elections. It is in the provincial capital that the most important posts of power are available . . . who are in charge of major departments of city administration.

In light of the significance of the provincial tier of party organization, local party activities and campaigns are likely to be province-specific in terms of issues, candidates and concerns. Since the PDS inherited much of the PCI's provincial infrastructure in Tuscany, and in light of the results from analyses thus far, provincial patterns of support over time will probably exhibit a certain degree of spatial–temporal stability. Noting that the Northern League is a regionalist party that frequently attacks the national government for its inefficiency and policies that undermine the economic strength of the north, its efforts are also probably concentrated upon provincial concerns and the local attachments of voters. The process of replacement within the Veneto, however, varies more than in Tuscany because the League is not a 'direct descendant' of an historically dominant party, and it does not overlap the same socio–territorial milieu as the disappeared Christian Democrats, in fact, it distances itself

from the corrupt, old regime. Therefore, a certain degree of spatial heterogeneity between provinces of the Veneto, which reflects the spatial-temporal structural instability illustrated in Fig. 4, may emerge.

Trellis graphics permits the visualization of municipal relationships on a province-by-province basis. Conditioning plots, or coplots, are used to subset the pairs of  $\bar{I}$  scores at the municipal level into provinces within each region, and are plotted together as a series of panels. Local regression lines, or *loesssmoothers* are superimposed onto each provincial pattern. The addition of the loess smoother provides a way to visualize how  $\bar{I}$  trends vary between provinces, and how they compare to the overall regional  $\bar{I}$  score. Differences between the dashed linear regression line,  $\bar{I}$ , and the loess smoothers (solid line segments) illustrate: (i) how the global score tends to under- or overestimate the slopes of local spatial relationships, (ii) provincial variations of spatial-temporal dependence across Tuscany and the Veneto, and (iii) the influence of extreme observations.

Two pairs of coplots are provided for each region, and each province within Tuscany and the Veneto is identified by name. Fig. 5a is the Moran's scatterplot for the PCI in 1987, divided into provincial panels, and is provided as a benchmark for comparison with Fig. 5b, the  $\bar{I}$  coplot using the spatial weights matrix of the standardized PCI share of votes in 1987 and the standardized returns for the PDS in 1996. Similarly, Fig. 6a is the benchmark Moran's scatterplot for the DC in the Veneto in 1992, again broken down into provincial panels, and Fig. 6b is the coplot of the spatially lagged standardized DC in 1992 against the standardized returns for

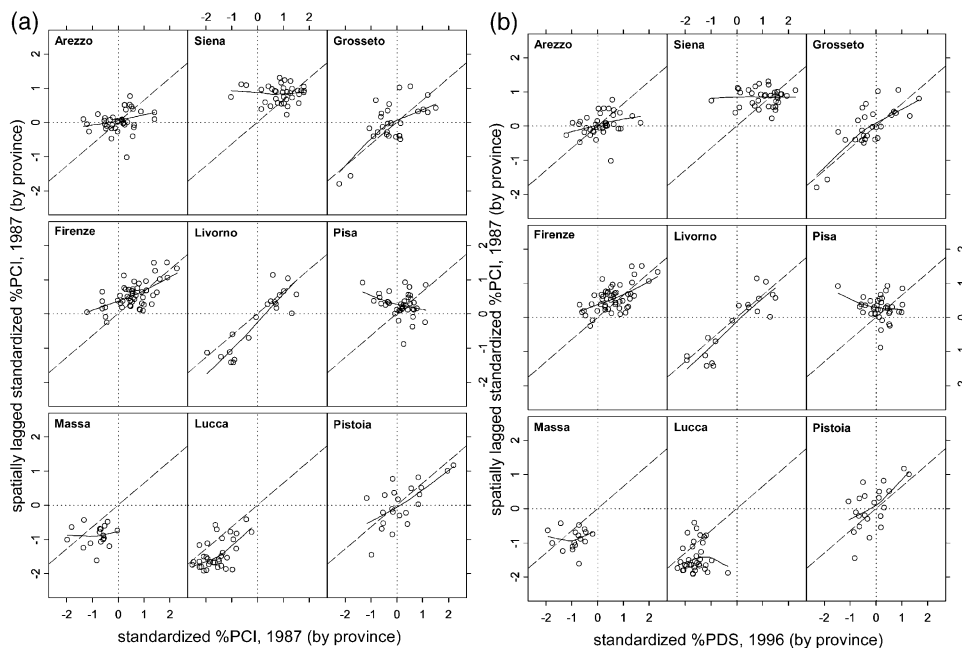


Fig. 5. Moran coplot for the PCI, 1987 and the PDS 1996 vs. PCI 1987 in Tuscany.

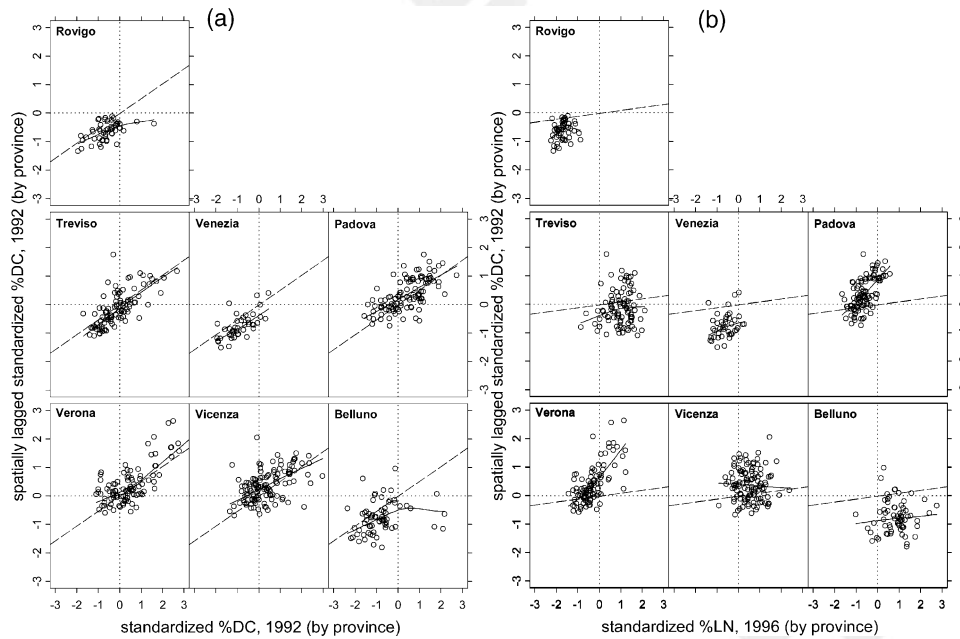


Fig. 6. Moran coplot for the DC, 1992 and the LN 1996 vs. DC 1992 in the Veneto.

the LN in 1996. The dashed lines represent the calculated  $\bar{I}$  score for each region in each election year, the line segment running through the cloud of points is the loess smoother for the province, and each panel is divided into quadrants that represent the four types of spatial-temporal association discussed earlier.

In the Moran's coplot of 1987 PCI support (Fig. 5a), the provincial 'organization' of types of clustering is quite striking. For example, low PCI support is exclusively clustered in Massa and Lucca, whereas higher levels of support are clearly clustered in Florence (Firenze) and Siena. Also, the majority of municipalities in Livorno, Pistoia and Grosseto display only positive spatial dependence, the loess smoothers following closely the regional Moran's I regression line. Within Arezzo and Pisa, the types of dependence vary more, and in Pisa the loess smoother actually indicates negative spatial autocorrelation which may be attributable to an influential observation in quadrant II. The  $\bar{I}$  coplot (Fig. 5b), displays almost identical patterns across the provinces to those found in Fig. 5a. This comparison illustrates the remarkable stability of support, or lack of support in Massa and Lucca, for the Italian left across space as well as over the nine year period from 1987 to 1996 when the PCI disappeared and the PDS emerged.

The set of plots for the Veneto tell a different story of replacement than that above. In Fig. 6a, the provincial loess smoothers tend to follow the regional Moran's I, and positive spatial autocorrelation of low DC support seems to cluster on a provincial basis, most visibly in Rovigo, Venice and Belluno. Comparing Fig. 6a to the  $\bar{I}$  coplot for the Northern League in the Veneto in Fig. 6b, many differences emerge. In

Rovigo, the clustering of low historic values of the DC is accompanied by very low support for the LN, and the leftward shift of the data cloud indicates that in this province it is unlikely that the League replaced the DC. Similar leftward shifts occur in Padova and Verona, and in Vicenza the leftward shift of cases above the horizontal indicates that the League has failed to capture comparable levels of former-DC support.

Provinces in which League support appears to have replaced the DC, marked by a rightward shift of the data cloud, include Treviso, Belluno, to a lesser extent Venezia, and also the cases below the horizontal in Vicenza. Rightward shifts above the horizontal, into quadrant I suggest that the LN may have substituted the DC; historically high levels of support for the DC in surrounding municipalities are related to currently high levels of support for the LN. This is what appears to be happening in some cases in Treviso. Rightward shifts below the horizontal into quadrant IV, however, suggest that the LN is colonizing previously unclaimed areas, or places where the DC received only marginal support in the past. The rightward shift of the data clouds below the horizontal in Treviso, Vicenza and most notably in Belluno indicate that in surrounding areas where support for the DC was historically lower or low, the League now enjoys above average support. Though this shift is most apparent in Belluno, it is interesting to note that in Vicenza spatial dependence of DC support in 1992 as indicated by the loess smoother is positive, but in 1996 the spatial-temporal dependence of LN support is negative. Contrary to the sets of coplots for Tuscany, the coplots for the Veneto illustrate that a considerable amount of instability, in both the spatial and temporal domains, is associated with the process of replacement. Furthermore, these plots call into question the argument that the Northern League simply replaced the Christian Democrats in the Veneto, in particular, and throughout northern Italy, more generally.

When municipal level data are viewed on a province-by-province basis in both Tuscany and the Veneto, distinct patterns and trends of spatial and spatial-temporal dependence emerge. As the coplots above suggest, LN efforts differ from those of the DC in the past, and in some provinces such differences may be considerable. Exploratory spatial data analyses (ESDA) elucidate the patterns of replacement, and inform how this process is manifest over space and time. Furthermore, such investigations into the spatial structure of data can help to pinpoint the most appropriate resolution(s) or scale(s) of analysis for subsequent studies of party replacement. Though emphasis was placed upon the underlying methods and interpretation of local indicators of spatial (-temporal) autocorrelation (LISA/LISTA), we conclude with a brief discussion about the processes underlying these patterns.

## Discussion

Spatial analyses disentangle the various types and combinations of party replacement in the Veneto and Tuscany, and provide guides to explaining and understanding recent political changes to Italian politics in geographic terms. In the Veneto, for example, the process of replacement was not uniform across the region, nor was the

process the simple substitution of one party for another, as Diamanti (1996: 26-29) suggests. The Northern League appears to have colonized parts of Belluno and Treviso where support for the Christian Democrats was low, in Vicenza it appears that a mix of substitution and colonization occurred, while in Rovigo, Verona and Venezia it seems that the League was unable to make any substantial gains.

One factor that accounts for this seeming disparity between simple substitution and colonization in the Veneto is that League support is strongest in those areas with high levels of employment and industrialization associated with small enterprises (Diamanti & Riccamboni, 1992: 167-187; Diamanti, 1996: 88; Riccamboni, 1997: 293). Historically, the DC was always strongest in rural, agricultural areas and small towns, thus providing a link between one and the other. During the last quarter of the twentieth century, however, the economy of small industries, flexible specialization and the 'urbanized countryside' exploded in areas that are marginal to urban industry and rural commercial agriculture. It is in these places that the League has been most successful in colonizing, by giving voice to voters alienated from the DC model of representation and dissatisfied with the failure of the state to provide what they perceive as necessary services to local industries at a time when international competition in their sectors is increasingly intense.

In Tuscany, party replacement can be viewed more as a combination of substitution and the splitting of votes. It is important to recall that the disintegration of the PCI was initiated by the central party apparatus, and was not in direct response to scandal or the electorate's dissatisfaction as with the DC in much of the north (see Ignazi, 1992; Baccetti, 1997). The PCI was also very successful and well-regarded in local government throughout the central regions of Italy, especially in Tuscany and Emilia-Romagna (e.g., see Putnam, 1993). Therefore, throughout most of Tuscany, one can view the substitution of the PCI with the PDS as a simple name change accompanied by a moderate shift towards the center of the Italian political spectrum. In fact, much of the party leadership, infrastructure and vote share was converted directly from the PCI to the PDS.

This substitution of the PCI with the PDS was not comprehensive because a radical minority of former-PCI supporters splintered off to form the Refounded Communists. Though the rationale behind the formation of the RC was dissatisfaction with the decision to reinvent and moderate the Italian left, the RC appears to have established a very strong presence in the provinces of Lucca and Massa (Shin, 1998; 2001b). Previous studies (Dogan, 1967; Agnew, 1992) cite small landownership and the legacies of Lucca's status as an independent republic as reasons for the PCI's inability to make significant electoral inroads in this area, but the success of the far-left RC in recent elections seems to contradict this historic pattern. One possible explanation for the success of the RC (or conversely, the low levels of PDS support in this area), in Massa in particular, stems from the restructuring of the local marble industry in the early 1990s (Internazionale Marmi e Macchine Carrara SpA, 2000). This local restructuring was accompanied by layoffs of miners and stoneworkers, a segment of the local population already recognized for their leftist orientations, many of whom may have subsequently sought an even more radical form of representation in recent elections, the RC. In this regard, not only are old PCI votes split between the PDS

and the RC, but the latter appears to be colonizing an area where the left had performed poorly in the past, and where moderate political positions are not appealing nor embraced.

### Conclusion

Exploratory spatial data analyses show clearly that electoral change in the Veneto and Tuscany is more complex than the direct substitution of one party with another. In some provinces of the Veneto, the Northern League appears to have colonized successfully areas where the Christian Democrats once were in power, while in other areas this regional party has been unable to make any significant electoral gains. In Tuscany, the PDS appears to have substituted the PCI directly in many areas, but the smaller, more radical RC appears to be colonizing an area where the Italian left has struggled in the past. The strengths of exploratory spatial data analyses, as applied to electoral change, lie in their ability to elucidate and to discriminate between the different types of party replacement (i.e., substitution, colonization or splitting), and to link places to political change. With respect to the latter, our analyses underscore the need to recognize that electoral change is not a singular process that occurs uniformly across a democracy, but a complex mix of spatially dependent processes.

Regardless of which type of replacement occurs, explanations of political change need to be situated within a geographic framework. Though understanding electoral change through, for example, the quantitative flow of votes from one party to another provides insights into aggregate shifts in support, it is impractical to assume that the rationale to switch votes between elections is consistent across a democracy. Similarly, political parties are not passive receptacles for votes, but are continually addressing issues at the local, regional and national level, directing resources from state to place when possible and even reshaping themselves between elections. Once the agents of electoral change are recognized to be geographically contingent, the processes behind party replacement will be better understood.

### Uncited references

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