The Territorial Factor

Political Geography in a Globalising World

Gertjan Dijkink & Hans Knippenberg (eds.)

In honour of Herman van der Wusten

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Chapter 4

Geography and democracy: the spatial diffusion of political and civil rights*

John O'Loughlin

Introduction

Since the end of the cold war, it has become commonplace to equate the rising hegemony of the United States in the economic and political-military world arenas to the triumph of the American world-ideology, or democracy over its ideological opponents. The seemingly inexorable rise in the number of democratic states after 1989, even at a time of economic stress and stagnation in many of the countries of the non-Western and Communist worlds, challenged two of the hypotheses that were mooted to explain the distribution of democracy. First, the positive correlation between wealth (measured by gross domestic product per capita) and democracy was weakened and secondly, the geographic concentration of democracy in a few of the world's regions (Western Europe, North American and the Pacific Rim) evolved into a more dispersed geographic mosaic after 1989. However, recent data from the late 1990s and re-analysis of the claims made by the U.S.-based triumphalists (Fukuyama 1992; Huntington 1991) have questioned the earlier conclusions about the waves of democratic growth and spread of democratic norms (Doorenspleet 2000). In this chapter, I examine the developments in the distribution of democracy since the collapse of the Communist systems a decade ago and I use new methods of spatial analysis to develop further the diffusion model that offered a useful prediction of the trends to the mid-1990s (O'Loughlin et al. 1998). With the benefit of a longer temporal window and new methods of analysis, it is now possible to check on earlier claims and counter-charges about the future of democracy on the world scale.

The profusion of works on the study of democracy has tended to fall into two groups. One group of scholars are interested in pursuing the debate of what constitutes democracy and draw heavily from political theory,

especially radical democratic theory. The key issue for writers in this vein is to what extent the liberal-democratic notions of earlier scholars, such as Robert Dahl (1979, 1989), are valid constructs for a diverse world and for diverse political aspirations. A key debate focuses on the measurement of democratic status. In general, radical theorists are unhappy with the procedural rule emphasis of the quantitative tradition in the field (Bobbio 1989; Held 1991; Laclau & Mouffe 1985). The second group of scholars (for convenience they can be referred to as the quantitative school) are less interested in the debate about what democracy is and more interested in measuring, documenting, mapping and understanding the distribution of this political phenomenon. Beginning with the work of Lipset (1959) and stimulated strongly by the construction of indices of political authority and individual rights in Polity I (Eckstein & Gurr 1975), Freedom House measures (Gastil 1990) and others (for example, Alvarez et al. 1996; Bollen 1993; Huntington 1991; Vanhanen 1984, 1997), this group of scholars has endeavored to connect political change to other contemporary developments, especially to economic development and to the interstate behaviour of states.

This paper clearly fits into the second group of works on democracy and offers a further exposition on the geographic dimension of the institutional basis of democracy. My working definition of democracy is a political system that allows inclusion, participation, and open competition in the political realm and engenders transparent political institutions, as well as protection of individual liberties, as outcomes of the political process. Unlike most analysts of political authority, in this paper I examine democratic norms across two dimensions – political rights and individual civil liberties. In contrast to an earlier paper on the diffusion of democracy (O'Loughlin et al. 1998), I switch from political institutional and authority structures to a more general measure of democratic status using the Freedom House data from 1972-1999. Both widely-used and often criticised, the Freedom House data allow an examination of the extent to which the state protects the rights of its citizens and thus, offers a valuable check on the institutional-focused conclusions of the existing body of quantitative research. Because the overall correlation between the Freedom House measures and the most widely-used data on democracy, that of Polity III, is +0.92 (and correlations with other democratic measures range from +0.81 to +0.93 – Jaggers & Gurr 1995: 475) and because the Freedom House database includes all states in the world-system (the number of cases varies by year and ranges from 150 to 190), the political and civil rights measures thus offer a reliable outcomes-

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based index of democratic status among the countries of the world over the past three decades of dramatic global geopolitical change.

The Political Geography of Democratic Diffusion

The spatial distribution of democracy was well-hidden in the earliest studies of the 'requisites of democracy' and remained so as the focus shifted to temporal cycles and repetitive patterns that developed in the 1970s and 1980s. Analysts referred to the relative absence of democratic states in the Islamic world, the shifts from democracy to autocracy and back again in Latin America, the concentration of democratic structures in the rich countries of Western Europe and the geographic outliers of the Indian, Japanese and Australian democracies. In his early work on the correlates of democracy (1959) and in more sophisticated quantitative studies later (1994), Seymour Martin Lipset made brief mention of the possible contagion effects on a state by developments in adjoining countries: '(T)he socio-economic correlations (of democratic scores) point to probabilities. Other factors, such as the force of historical incidents in domestic politics, cultural factors, events in neighbouring countries, diffusion effects from elsewhere, leadership and movement behaviour, can affect the nature of the polity' (Lipset, Seong & Torres 1993: 158).

Rather than spatial diffusion, the search for regularities in the changing distribution of democracy has focused on the waves or cycles of growth and retreat. By far the best-known model, that of Samuel Huntington (1991), provided both empirical evidence for the cyclical approach to predicting democratic spread and a theoretical basis for such an expectation. Like many others, Huntington's definition of democracy drew upon Dahl's (1979) tripartite measure of competition, inclusiveness and civil liberties. However, a more careful examination by Doorenspleet (2000) of the inclusiveness variable that expands the definition to include universal suffrage as a pre-condition for democratic status indicates that the transitions to democracy are a twentieth-century phenomenon and that the trend towards expansion of the democratic world in both number of members and meaning of democracy is a more invariant upward-trend than indicated by Huntington. His 'two steps forward, one step back' summary of democratic change understates the progressive nature of global political development. (Doorenspleet 2000)

Lipset (1994) returned to the theme of his earlier work on democracy to review the research completed in the meantime and to re-visit the link be-

tween wealth and democracy. He recognised the need for governments to maintain legitimacy by keeping their economic houses, as well as political houses, in order. However, a particularly dangerous moment for regimes occurs when the economy is undergoing a severe change, either due to domestic challenges or more than likely, from external pressures. The political system can collapse when conditions are beginning to improve due to the revolution of rising expectations by citizens. Stable democracy in the long run also depends on a stable economy, clean government and transparent institutions. Since the economic basis of democracy is so central to understanding its global distribution, it follows logically that global regions that enjoy stable economic conditions and economic efficacy (to use Lipset's term) also have the prerequisites for stable democracy – Western Europe, North America and other wealthy countries. This conclusion does not mean that other regions cannot become democratic but implies that the chances of stable, sustainable democracy are much lower.

The geographic distribution of democracy has been strongly correlated with the political geography of the cold war and the rapid spread of democracy beyond its traditional locations in rich countries to many parts of the world after the collapse of the Communist regimes 1989-1991. A simple plot of a democracy score (democracy minus autocracy) by world region since 1960 shows a strong upward trend in Africa and the Asia/Pacific realms after 1990 and more modest upticks in Eurasia and the Americas. In contrast, the Middle East, though with higher values since 1980, retained the same overall rating as the region had in 1965. The relative absence of democratic regimes in Islamic countries has also been noted by Bollen and Jackman (1985), Diamond, Linz & Lipset (1995), Huntington (1991), and Lipset (1994). However, these commentators do not adhere to a cultural-religious explanation but anticipate a substantial shift in the political profile of Islamic states as the middle class enlarges, capitalism takes root, education levels rise, and civil society institutions gain support.

But the political geography of democratisation is more than the spatial distribution of democratic forms of government. Just as there has been a concerted search for empirical regularities in the temporal sequencing of democratic transitions, the pattern of spatial change is also significant. An in-depth analysis of the distribution of democratic, autocratic and transitional regimes from 1948 to 1994 revealed very strong spatial autocorrelation in the world-system (O'Loughlin et al. 1998). (Spatial auto-correlation refers to the association of values of a variable in adjoining or neighbouring countries; similar values, either high or low, will produce positive spatial au-

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tocorrelation, whilst dissimilar values generate negative auto-correlation indices.) The space-time plots of the auto-correlation coefficients showed a drop-off in significant values after lag 1 (neighbouring countries) and a gradual decline in the temporal lag values. The interpretation was that democratic states are strongly clustered geographically whilst the year-to-year change in the values in a country was very small. Further exploration of the diffusion of democracy showed important regional differences within continents (e.g. West and South Africa, North and South parts of Latin America) that could be attributed to local processes of political development and 'learning from the mistakes of neighbours'. Importantly, the statistical artifact of spatial clustering remained after the control of economic development (gross domestic product per capita) was introduced indicating that the co-location of regime type (democratic or authoritarian) is partly independent of the relative economic well-being of the states.

In a follow-up study to O'Loughlin et al. (1998) for a sample of polities since 1875, Kristian Gleditsch (1999) showed that not only did 'political authority structures' (another term for regime type) cluster over space and time but so did interstate conflict and integration. This research confirmed the 'requisites of democracy' variables but through a sophisticated quantitative analysis using a variety of methods, Gleditsch also concluded that the regional composition of state attributes and interactions is more important for democracy and the presence or absence of inter-state conflict. The likelihood of any political change in a state is strongly related to the changes in adjoining countries and the prior history of regional contexts. This work, extending the spatial diffusion of democracy approach and linking it to the large literature on interstate conflict and cooperation (see for example, O'Loughlin & Anselin 1991), offers extended temporal evidence for the validity of the diffusion hypothesis and the caution that further analyses of the democratic phenomenon should be placed formally and explicitly in the geographic domain.

In this paper, I extend the previous research on the geographic diffusion of democracy in a different direction, by examining more carefully the geographic measures of spatial contagion. In the previous article (O'Loughlin et al. 1998), the measure of auto-correlation was a non-directional one – that is, it did not measure the directional bias of the contagion nor did it extend the analysis to consideration of whence the contagion (of democratisation) emanated. Using a new methodology that is now gaining momentum in the field of spatial statistical analysis, I re-examine some of the key findings of the earlier study using a different data-set and this new directional statistical methodology from Rosenberg (2000).

Data and Methodology

The study of the distribution, transition and trends of democratisation has been bedevilled by the uncertainty about the best measures of this political form. Beyond the debate about the definition of democracy, *sensu stricto or sensu lato*, the difficulty of coming to consensus about the measures of democratic practice (norms, rules, procedures, etc) continues to occupy many pages of the literature. The Polity III data set is now probably the most widely used since it has been updated to the present and its data errors corrected. Its methodology has been examined and improved (Jaggers & Gurr 1995; also see the Polity III web site – *http://k-gleditsch.socsci.gla.ac.uk/Polity.html*). The validity and replicability of this data set can be gauged from the high correlations of this measure with other indices of democracy. The other advantage of the Polity III data is that they allow a variety of general indices as well as specific procedural measures by choice of the sub-measures that constitute the overall democracy score. The most general index is a democracy minus autocracy value that subsumes all of the twenty-four authority characteristics (O'Loughlin et al. 1998: 569).

The key limitation of the Polity III measures is that they are confined to the political arena and revolve around regime types and selection procedures. Returning to Dahl's (1979) definition of democracy, we must consider other non-regime-based measures if the measurement of democracy is to win credibility as a general statement of the quality of social and political life in a state. Since 1971, the Freedom House foundation has been collecting statistics on the members of the international system and produces yearly political rights and civil indices, as well as an overall index of whether a state is 'free', 'partly free' or 'not free'. In its key publication (*Freedom in the World: The Annual Report on Political Rights and Civil Liberties*, available from *www.freedomhouse.org*), the foundation's survey team looks at conditions in each country (over 190 in 1999) for ten political rights questions and for twelve civil liberties questions/categories. Unlike the Polity database, the Freedom House scores do not reflect government behaviour, but

rather the rights and freedoms enjoyed by individuals in each country or territory… To reach its conclusions, the survey team employs a broad range of international sources of information, including both foreign and domestic news reports, NGO publications, think tank and academic analyses, and individual professional contacts.
(from the website *www.freedomhouse.org/survey/2000/method.html*).

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Further,

> political rights enable people to participate freely in the political
> process, which is the system by which the polity chooses authoritative
> policy makers and attempts to make binding decisions affecting the
> national, regional, or local community. In a free society, this represents
> the right of all adults to vote and compete for public office, and for
> elected representatives to have a decisive vote on public policies. Civil
> liberties include the freedoms to develop views, institutions, and
> personal autonomy apart from the state.

Because of the consistent methodology and the long temporal span (1972-1999) as well as offering complete coverage of all countries, the Freedom House database offers the most comprehensive information about the political and social changes over the past three decades, including the cold war and post-cold war periods.

For the past decade, interest has grown in the spatial statistics research community in expanding the suite of techniques that are available to summarise spatial patterns, clustering/randomness (autocorrelation) significance, and spatial flows for a variety of point, line and areal data. One approach has been to disaggregate global spatial auto-correlation statistics, like Moran's I, to each geographic unit in the analysis so that the contribution of each location's attributes to the overall value can be mapped and isolated (Anselin 1995). A second improvement has been to extend global measure of spatial clustering from the non-directional methods like Moran's I to directional methods. This development has been especially noticeable in the fields of environmental biology and epidemiology where identification of directional spatial autocorrelation is an important tool in the understanding of morphologies and environmental correlates (Sokal & Thompson 1998).

The value of the new extensions to directional auto-correlational statistics can be estimated from the following example from environmental biology. Imagine a forest with some trees damaged by an insect infestation such as pine beetles. The usual spatial autocorrelational analysis can determine if the pattern of damage to the trees is clustered significantly more than would be expected from a random process and the extensions to local indicators of spatial association (LISAs) can show the geographic pattern of significant positive and negative values (values for individual trees weighted by their geographic coordinates). But suppose the pattern of LISAs shows a northwest trend, perhaps caused by the migration of the pine beetles in this di-

rection due to local environmental (terrain or climatologic) conditions. The need for a statistic that incorporates the geographic coordinates, their angular relations with respect to a fixed bearing (e.g. North) and the values of the item of interest (in this case, the level of tree infestation by beetles) to determine if there is significant directional bias in the pattern is obvious and one can easily envision extensions to the social science domain, such as the changing pattern of democracy over the past decade. Oden & Sokal (1986) introduced the first directional spatial autocorrelation techniques by creating 'distance/direction classes' to create a windrose correlogram; sectors represent the same distance but different angles grouped together in rings called annuli (Rosenberg 2000: 270). The windrose spatial auto-correlation technique requires large numbers of data points and thus is rather limited for most social science applications. Rosenberg's extension to 'bearing spatial autocorrelation' blends the directional advantages of the earlier method with the more modest data available to social scientists. It can thus be appropriately used for the study of democracy with a database of 120-200 states.

The selection of spatial weights (measuring the attraction or contiguity of places to each other) has bedeviled spatial analysis since no commonly agreed method for choosing the weights structure is available. In the bearing spatial correlogram, the weight variable incorporates not only the distance or contiguity between points (centroids or capital coordinates of a country) but also the degree of alignment between the bearing of the two points and a fixed bearing; in this chapter, the fixed bearing is the east direction. For each distance class (predefined based on some conception of appropriate distance bands for the study), the weights matrix is determined by multiplying the non-directional weight value (distance between the points) by the squared cosine of the angle between the points and the eastern bearing, or formally as $w`_{ij} = w_{ij} \cos^2 (a_{ij} - q)$, where $w`_{ij}$ is the $i-j^{th}$ entry of the bearing weights matrix, w_{ij} is the distance weights between the capitals, a_{ij} is the angular direction between points i and j measured counterclockwise from due east, and q is the angular direction of the fixed bearing. We can calculate the standard spatial autocorrelation statistic, Moran's I, in the normal manner using the $w`_{ij}$ weights in the place of the usual non-directional weights in the measure. Moran's I is given by $I = (N/S_o)S_i S_j w_{ij} x_i x_j / S_i x_i^2$ where w_{ij} is an element of a spatial weights matrix W that indicates the new bearing weight matrix for i and j; x_i is an observation at location i (expressed as the deviations from the observation mean); and S_o is a normalising factor equal to the sum of all weights $(S_i S_j w_{ij})$. The significance of

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Moran's I is usually assessed by a standardised z-score that follows a normal distribution (O'Loughlin et al. 1998) but in the bearing correlogram, the significance test is a Bonferroni procedure that accounts for the multiple directions (see Rosenberg 2000: 276). The procedure is repeated for each fixed bearing. In this study, the spatial auto-correlation values for eight distance classes (less than 300 km, 301-600 km, 601-900 km, etc) and nine fixed angles, each differing twenty degrees from the east fixed bearing (twenty degrees, forty degrees, etc.) in a counter-clockwise manner, are calculated. All analyses were completed using the Passage (Pattern Analysis, Spatial Statistics, and Geographic Exegesis) computer program from Michael Rosenberg, available from *www.public.asu.edu/-mrosenb /Passage/* .

Directional spatial autocorrelation of political rights and civil liberties

The analysis in this chapter elaborates the changes since 1972 in the spatial distribution of the political rights and civil liberties indices from Freedom House to see if any spatial, directional or temporal trends can be identified. From the study of the Polity III database and other aggregate empirical quantitative analyses, spatial diffusion is expected to be indicated by the indices. Whether definite directional trends can also be identified lies at the heart of this chapter.

The analysis begins with a replication of the O'Loughlin et al. (1998) study using a different dataset. As shown by the non-directional graphs of the Moran's I indices 1972-1999, there are sharp differences between the two measures of democratic status, political rights and civil liberties (figure 4.1). In the graphs, the rings refer to the distance bands between the national capitals: up to 300 km, 301 to 600 km, and 601 to 900 km. In both non-directional graphs, the Moran's I values for the first ring are insignificant for all years, 1972-1999, probably due to the fact that 300 km rings does not incorporate a lot of neighbours. Most capitals are farther than that distance from their nearest neighbour. The second common feature of the two graphs in figure 4.1 is the dramatic change in the trends around 1990, with noticeable decreases occurring for political rights in the 1989 values for Rings 2 and 3, with a similar fall in 1991 for civil liberties. (Higher Moran's I values indicate spatial clustering of similar values.) From nearly insignificant values in 1972, the political rights clustering value increased steadily to 1989 before a temporary drop to 1993 and a rise thereafter for Ring 2 (second-order neighbours) and lowered values for Ring 3 (distances 601-900 km). The interpretation is that the dramatic geopolitical changes at the end
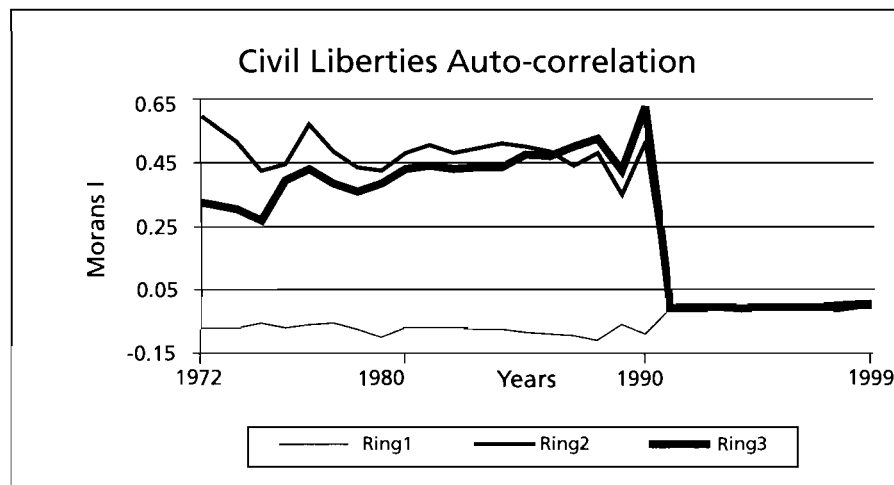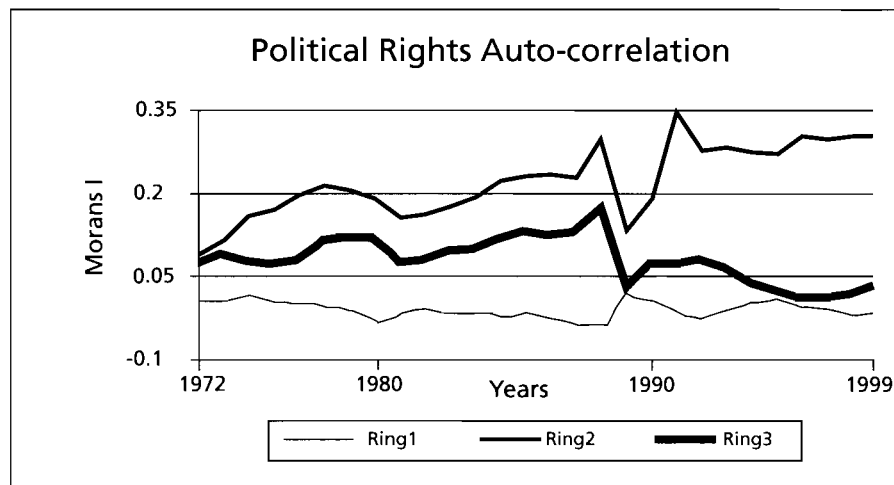
Political Rights Auto-correlation

Civil Liberties Auto-correlation

Figure 4.1   *Non-directional spatial autocorrelograms for political rights and civil liberties, 1972-1999*

of the cold war, including the break-up of the Soviet Union, the disappearance of Communist regimes in Eastern Europe and parts of the Third World, and the collapse of authoritarian control in Latin America and parts of Africa, generated higher spatial clustering in the democratic index of political rights. In the O'Loughlin et al. (1998: 557) study, a trend similar to

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that for Ring 2 is evident. In that case, the Polity III database (emphasising political openness such as restrictions on executive authority, competitiveness of elections, and regulation of political participation) and a weights measure based on country contiguity generated increasing positive and significant Moran I values to 1991 and dropping indices thereafter to 1994 (the last year of the study). Using a weights measure that considers countries close to each other, either by contiguity or inside a short distance band, democratic political rights have become more spatially clustered over time and wide swatches of the globe are now stably democratic. On the world map, the contrast between the regions of democracy and those of autocracy is becoming more precise over time and with over half of the countries in the world democratic in 1999, the islands of authoritarianism are more clearly delineated.

The spatial autocorrelation for civil liberties was significantly higher than that for political rights during the cold war. Beginning in 1991, the high clustering values for Rings 2 and 3 have dropped to the insignificance level indicating that there is no significant spatial autocorrelation of civil liberties in the world. In a sense, the black-white worlds, support for civil liberties contrasted with those countries where mistreatment was endemic, has eroded and though there are still many states with gross violations, they are not clustered together spatially. Unlike the political rights profile, the end of the cold war has seen the easing of the spatial bi-polarity that was evident in civil liberties until 1991.

The second set of analyses extended the non-directional Moran's I analysis into the directional domain, examining the expression of spatial autocorrelation over time and spatially by dominant direction. By comparing the bearing correlograms (the semi-circular display of the Moran's I values) over time, it is possible to identify the nature of the directional changes in the distribution of democratic values, such as political rights and civil liberties. Unlike simple temporal plots, the bearing correlogram is a bit more challenging to understand since the reader is viewing three relationships at the same time – direction, significance and degree of significance (figures 4.2 and 4.3). The bearing correlograms are given for the start of the study period (1972), the key year of 1990, and 1996, representing the later years of the temporal sequence. On the graphs, the significance of the Moran's I values is indicated by the symbols (open circle, black diamond or grey triangle), the size of the coefficient is shown by its radial displacement relative to the ring, and the angle of the radius linking the origin to the plot of the coefficient shows the direction of the fixed bearing, in twenty degree incre-

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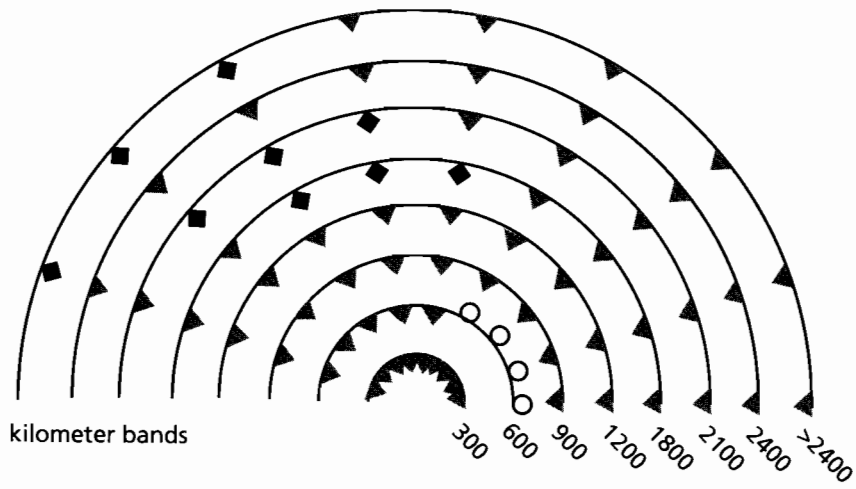
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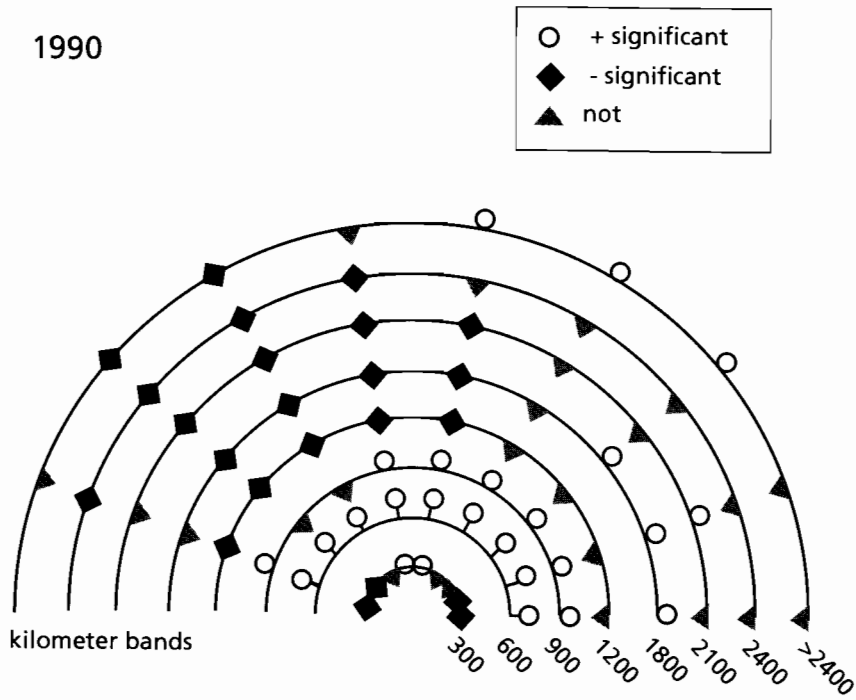
Figure 4.2 *Bearing correlograms for political rights, 1972 and 1990*

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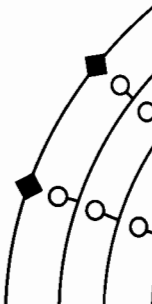
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Political Rights 1996

kilometer bands   300   600   900   1200   1800   2100   2400   >2400

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GDP/capita 1996

kilometer bands   300   600   900   1200   1800   2100   2400   >2400

Figure 4.3   *Bearing correlograms for political rights 1996 and Gross Domestic Product per capita, 1996*

ments from due East. On the diagrams, the direction of greatest change with distance is that in which the auto-correlation coefficients change from positive to negative most quickly.
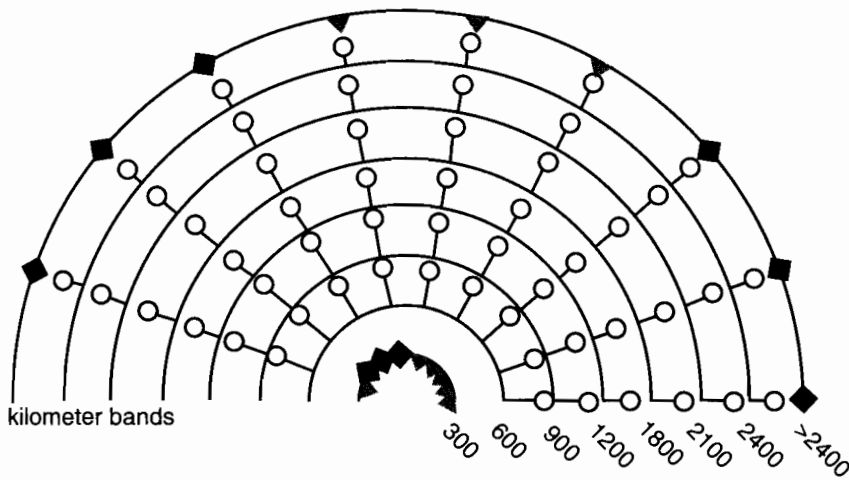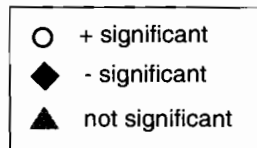
On the political rights 1972 correlogram (figure 4.2), most values of Moran's I are non-significant; only positive spatial autocorrelation in the north-eastern direction in the second ring and negative autocorrelation to the north and north-west in the fifth, sixth and ninth rings (at 1800, 2400 and more than 2400 km) are identified as significant. The interpretation of the correlogram indicates a moderate trend towards significant positive autocorrelation at a short distance (300-600 km) in the easterly/north-easterly (and west/south-westerly) direction. (Only half of the direction is displayed and the opposite direction should be considered as part of the directional trend). Like all correlograms, the values of the Moran's I scores are hard to interpret at higher-order lags unless they have been progressively changing in a consistent direction (more positive or more negative) when spatial lag increases. Consequently, interpretation focuses on small lags, in this case, below 900 km (Ring 3). Referring back to the non-directional graphs in Figure 4.1 for comparison, it is clear that Moran's I scores for all lags were insignificant in 1972; the directional circular graphs show some significance in one direction – easterly/north-easterly to west/south-westerly direction. For an explanation, consider the orientation of the world map, centered at zero degrees latitude (Equator) and zero degrees (Greenwich) longitude, just off the west central African coast. The concentration of low political rights values in the Communist states of Eastern Europe, the former Soviet Union and of the East Asian mainland in 1972 (the east and north-east portions of the map) accounts for the directional trend of the spatial autocorrelogram. The bi-polar ideological pulls of the cold war underpin the display of the geographic direction in global political rights.

By 1990, great change and geographic complexity is evident in the bearing spatial correlogram (figure 4.2). Unlike 1972, most of the Moran's I indices are significant, with positive values dominating at smaller spatial lags as well as the east/north-east bearings of the outer ring (Ring 8 greater than 2400 km) and significant negative values most evident to the north and north-west at medium to large spatial lags. Also evident is the large size of the significant positive indices for the second ring (301-600 km). In the non-directional graph (figure 4.1), significant positive Moran's I values are visible for 1990 for both Rings 2 and 3, increasing dramatically after the end of the cold war in 1989. The 1990 bearing correlogram's complexity makes

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interpretation less than straightforward. As for the higher-order lags, the Moran's I values for a short distance ring can be difficult to interpret unless this distance band captures many neighbours (in this case, other capital cities). The fact that the first ring in 1990 contains significant positive (to the north) and negative values (to the west and to the east) supports the point made previously that this bandwidth of 300 km is simply too short for the present global scale of analysis. Attention again must be focused on the second and third rings, 300-900 km. As in the non-directional correlogram, large positive Moran's I values, indicating strong geographic clustering of political rights in 1990, dominate for all bearings in these rings. However, when the fourth ring (1200 km) is reached, the clustering dissipates, to be replaced by negative spatial autocorrelation to the north and northwest (opposite south/southeast). (Negative Moran's I values reflect a mixed pattern of high and low values, like a chessboard.) Combining this statistical display with the geographic distribution of political rights in 1990, it appears that the east/northeast directional trend identified in 1972 is still present (and even stronger) in 1990 but at higher spatial lags, the main bearing of change is to the west and northwest (and east/southeast). Comparison of this correlogram to figure 2 of O'Loughlin et al. (1998: 558) shows why the east/northeast to west/southwest direction dominates since the coherent Latin American cluster of democratic states anchors one corner of the globe and the newly-free electoral systems of the former Soviet Union anchors the other pole. In between these antipodes is a zone of autocratic regimes across North Africa, the Middle East and Central Asia as far as China.

The bearing correlogram for 1996 (figure 4.3) remains very similar to that of 1990. The strong positive spatial autocorrelation in all directions is again evident for the second ring, as is the north-south directional element in the first ring. Like 1990, the significant values for the larger lags are negative, though again the significant positive northeast-southwest axis is visible for lags 6 to 8. Since 1990, this directional trend seems to be strengthening. Short of a democratic reversal in the former Soviet Union or Latin America (certainly still possible) or a democratic wave in the Islamic world, this directional bias of a world between antipodal democratic zones that envelope a central region of authoritarianism will persist beyond the decade of its existence.

The analysis was repeated for the civil liberties index for all the years from 1972 to 1996. However, unlike the political rights correlograms, three of which are displayed here, none of the correlograms for civil liberties for

any year showed any significant positive or negative values. While the non-directional correlogram for civil liberties shows significant levels of positive spatial autocorrelation from 1972 to 1990 (dropping to insignificance after 1990), only non-significant values were identified for the nine twenty-degree angular directions in the bearing correlograms. This is not necessarily surprising since it is possible to have a significant global non-directional indicator decomposed into non-significant values for the angular directions. Such an effect is often seen when a significant Moran's I is decomposed into LISAs (Local Indicators of Spatial Association) that are place-specific. While the overall clustering of the map is significant, no one region of geographic units stands out as more significantly clustered than the other regions.

For comparative purposes, one of the 'requisites of democracy' (Lipset: 1994), that of gross domestic product per capita, was analysed using the Passage program. The resulting bearing spatial correlogram is shown in figure 4.3. As might be expected, significant positive spatial autocorrelation dominates the display, with the notable exception of lag 1 (less than 300 km) where insignificant and negative Moran's I values are found. As has been shown in other studies (O'Loughlin & Anselin 1991; O'Loughlin, Flint & Anselin 1994), spatial clustering of socio-economic predictors such as income, religion, class, etc. are more spatially clustered than political outcome indicators (voting preferences, wars, democratic scores, and political ideologies). With a strong spatially clustered variable like national GDP/capita, the use of the bearing spatial auto-correlation approach adds little to the understanding of the patterning. Its most reliable and potentially most useful applications are in complex spatial developments that can be decomposed into directional analysis.

A final analysis extended the study to the examination of the Lipset 'social requisites of democracy' model. The purpose was to see if the residuals from a Lipset-style regression of socio-economic predictors of the general freedom index, classify countries as 'free' or 'partly free' and 'not free'. A logistic regression for 1998 of twelve indicators (urban percentage, education spending, doctors per capita, Islamic or not dummy variable, West or not, Orthodox or not, life expectancy for males and females, population growth, infant mortality, GDP/capita, and fertility rate) with the freedom dummy variable found that 86.5 percent of the cases could be correctly classified as free or partly/not free using these predictors. The strongest effects were found for the variables, GDP/capita and the Western dummy, and the chi-square value was highly significant at 81.8 with twelve degrees of freedom.

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With such a high level of predictability, it was not expected that the residuals would display much geographic patterning and in fact, neither the non-directional nor the directional calculation of the Moran's I index revealed any spatial clustering of the error terms. We can conclude that the 'requisites of democracy' approach accounts well for the geographic distribution of the generalised freedom index, though as indicated by O'Loughlin et al. (1998) for a more specific and disaggregated political rights variable (the democracy-autocracy score from Polity III), there is a significant clustering in the error terms when GDP/capita is used as a predictor of democratic status.

Conclusions

This study has re-certified some of the conclusions of earlier work on the social requisites of democracy and the spatial analysis of democratic procedures and values. Using a dataset complementary to that of Polity III, the Freedom House political rights and civil liberties data, and a new statistical procedure that offers more insights into the geographic structure and direction of the distribution by country of these democratic norms, it is clear that the end of the cold war marked a major change in the geography of democracy. During the cold war, ideology and political practice divided the globe into democratic and authoritarian regions, indicated by significant values of the spatial autocorrelation index, Moran's I. Over the past decade, this bi-polarity has evaporated to be replaced by another geographic divide, with democratic geographic peripheries surrounding an authoritarian centre in the Middle East and Central-East Asia. The directional (bearing) correlogram reflects this spatial trend with an angular bias of significant positive spatial autocorrelation along the east-northeast/west-southwest axis in the 1990s.

The research in this and other recent papers has indicated the value in a diffusion perspective on the issue of democratic growth and change. While the requisites of democracy approach is helpful in suggesting the underpinnings of democracy and autocracy across the globe, it removes the polities from their regional settings and cannot properly analyse the growth and decay of democratic governance and civil rights. Lipset (1994) has alluded to the significance of the geographic setting by suggesting that there is a regional learning effect – a kind of snowballing of political change that can quickly alter the regional profile, as happened in Eastern Europe in 1989 or in Latin America in the late 1980s. In order to find out if such diffusion ef-

fects are present in addition to the structural causes of political change, we need a more sophisticated spatial methodology, one that will allow a deconstruction of the global indicators such as Moran's I. The new methodology of directional statistics applied to aggregate data offers one such path.

An explicit aim of this chapter is to re-assert the value of the quantitative study in the field of political geography. Unlike other social sciences, especially economics and political science, human geography has seen a relative retreat from the use of statistical methodologies in the past two decades as interest in social theory has grown. Clearly, both approaches are needed to understand the global phenomenon of democratic growth since about 1975. Theory will help to identify the underlying causes of the political change but stopping at the water's edge of theory wastes the chance to test the theoretical propositions. The credibility of the discipline of geography is maintained only by appropriate testing. In the field of geographic study of democratic change, the balance between theory and empirical testing has shifted disproportionately to theoretical debates, especially the construction of alternative models of democracy. This paper has sought to redress that imbalance and promote the perspective of theory integration and empirical testing, a model always present in the work of Herman van der Wusten.

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