Appendix A

The Map and Moran’s I

State road maps, a digitizing table, and Autocad were used to construct the computerized maps. The geographic information systems database also includes, in addition to electoral results, social and economic indicators from the 1980 census, all budgetary amendments offered for the 1989–91 budgets, and the results of the 1989 presidential election. The nearest-neighbor matrices used to calculate Moran’s I derived from the map coordinates. Paul Sampson of the University of Washington provided the program creating these matrices. For an introduction to spatial analysis, see Cliff et al. (1975). The Brazilian census agency has now produced publicly available coordinates for all national municipalities.

The tendency for municipalities to subdivide, a tendency frequently influenced by purely political considerations, seriously complicates mapping. Since the census data are based on 1980 borders, municipalities created after that date had to be aggregated into old ones. In some cases, the number of new units was so great that aggregation distorted political events. In other cases, old states were compromised by the creation of new states. As a result, the analysis excludes Goiás, Tocantins, Mato Grosso, Mato Grosso do Sul, Acre, Amapá, Rondônia, and Roraima. Although malapportionment gives these states considerable political force, most have very small populations.