ADVANCES IN THE SPATIAL THEORY OF VOTING
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Edited by
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and
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We dedicate this book in grateful appreciation to Duncan Black.
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Foreword

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In an early paper (1929), Harold Hotelling studied the equilibrium of spatial economic competition between two firms that first chose locations and then price. His conclusion was that the firms would locate right next to each other, since each could gain by moving in the direction of the other and thereby increasing market share. It was assumed that consumers were uniformly distributed over an interval and paid the cost of transportation, so that each one would buy from the least-cost source, taking account of both price and transportation. Under these assumptions, the common equilibrium location would be found at the center of the interval, which is, in this case, the location of the median consumer.

Hotelling was especially concerned about this outcome because, as can easily be seen, the optimal locations of the two firms would be at the two quartile points, that is, at one-quarter of the interval length from each end. Hence, the competitive system led to a suboptimal outcome.

At the end of his paper, Hotelling argued that the tendency of competitors to become identical is applicable more generally. Spatial differentiation can be a metaphor for quality differentiation of products and for differences of political programs. Hence, Hotelling concluded, political parties tend to offer programs that resemble each other closely, instead of offering clearly separated alternatives, the latter, he thought, leading to superior outcomes.

The Hotelling argument has been shown to be fallacious in its original application (d’Aspremont, Gabszewicz, and Thisse 1979); the problem is that in the second stage, where locations are given, if the firms are sufficiently close to each other, a best response by one firm to a price chosen by the other may be to undercut the latter at its own location and therefore in the entire market area beyond it. For a fixed pair of locations, there is no equilibrium in pure strategies. But this difficulty does not affect the analogous equilibrium for differentiated political parties, for there is no equivalent of the price competition.
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The Hotelling paper started a considerable interest in spatial competition. To my knowledge, the only author who referred to the political implications was Smithies (1941). Smithies introduced the elasticity of demand into the story. The political interpretation of elasticity in a two-party world was the possibility that the extremists would abstain if the party closer to their views moved too far away in an effort to get moderate votes.

An unusual and isolated paper was Bowen (1943). He considered each voter as choosing an optimal level of government expenditures, on the assumption that the tax-sharing rules were given. Under standard economic assumptions on each individual’s indifference map between collective and private consumption, preferences would be single-peaked, and Bowen did indeed derive the existence of what we might now call a Condorcet majority level of government expenditures. The conclusions were stated in a way that obscured the general line of reasoning.

It was in this somewhat tentative groping that Black’s (1948a) paper came as a revelatory light. My personal reaction was that the formulation there was precisely the appropriate one for considering the problem of voting under more general assumptions. I had had a fitful concern with voting as analogous to economic choice and had stumbled (about 1946) on what I now know to be the Condorcet paradox, although I was sure that someone must have anticipated me. I was therefore ready to appreciate Black’s precise formulation (developed further in 1948b–d). What was especially remarkable was the achievement of a positive result. If one makes the spatial assumption, not dissimilar to Hotelling’s and Bowen’s, that the alternatives can be located on a line and that preferences are representable by a quasi-concave utility function, then the median most preferred point will have a majority against any other. Indeed, further, pairwise majority voting among the alternatives will actually produce a complete order.

The very fact that such a strong assumption as single-peakedness seemed to be used essentially suggested a general impossibility theorem. Indeed, simultaneous with my own work, Black and Newing (1951) showed that if the alternatives are represented in two dimensions rather than one, even quasi-concavity does not guarantee the existence of a Condorcet candidate, much less an ordering. But the positive results have indeed given rise to a very significant literature in which special assumptions about the structure of preferences over a spatial representation of alternatives have given rise to strong conclusions about existence and properties of equilibria in political competition. The stimulus and power of Black’s contributions are permanently recorded in the subsequent literature, and we are all grateful.
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REFERENCES
