Collective Decision-Making: Social Choice and Political Economy

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12. Extending a Dynamic Model of Protocoalition Formation

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12.1 Introduction

With some loss of historical accuracy, we may think of there having been two generations of research on formal models of coalition formation. The first generation (see, *e.g.*, Browne 1971; Koehler 1972; Rohde 1972a, 1972b; Leiserson 1968; Dodd 1976) was inspired by Riker's seminal statement of the minimal winning coalition hypothesis (Riker 1962; Gamson 1961).[2] The second generation of models has focused on policy-driven motivations. The best known of these models is Axelrod's (1970) notion of undimensionally "connected" coalitions (*cf.* Leiserson 1970a, 1970b; Hinckley 1972; Rohde 1972c). DeSwaan (1970, 1973) proposed a closely related notion of "policy distance minimizing" coalitions. Similar approaches are also found in Morgan (1976) and in Browne, Gleiber and Mashoba (1984). The early emphasis on minimum winning coalitions has been found inadequate both empirically (Browne 1971; Taylor and Laver 1973)[3] and theoretically. For example, Grofman (1984) has argued that real world coalition politics is very unlikely to be zero sum in nature, and thus a key assumption of Riker's (1962) work is inappropriate to the cabinet coalition context. More generally, several authors (see Luebbert 1986; Franklin and Mackie, 1984; Schofield 1984) have made very similar points about the inability of most coalitional models of cabinet formation to account for the substantial number of minority and supra-minimal coalitions or to accommodate the dramatic differences in coalitional types across countries.

Minority governing coalitions are common in a number of countries, and are actually the predominant type in some countries (*e.g.*, Norway, Sweden, Denmark) (see Luebbert 1983; Taylor and Laver 1973; Schofield 1993a), while they never or almost never occur in other countries (*e.g.*, Israel, the Netherlands, Belgium, Germany). Luebbert (1983), Straffin and Grofman (1984) and Franklin and Mackie (1983, 1984), among others, have suggested that the political cultures of various countries may result in parties in different countries

[1] This article is a revision and extension of Grofman (1982). Figures 1-4 are reproductions or adaptations of those presented in that article.

[2] Riker's own (1962) formulation gave rise to two quite distinct hypotheses: one is the "minimal winning coalition" hypothesis; the second is the assertion that the winning coalition which will form will be one with the least resources (that is the smallest total number of seats) needed to win. The set of such "least resource" coalitions will, of course, be a (not necessarily proper) subset of the set of minimal winning coalitions.

[3] Also, the empirical evidence is such that the "least resource" hypothesis can clearly be rejected, as can the "fewest actor" hypothesis.

assigning different relative weights to their concerns for ideology and power. Luebbert (1983) points out that countries differ in the opportunities "politicians have for party cooperation inside and outside the cabinet context." This in turn has implications concerning the set of potentially winning coalitions that parties wish to join, because differences in political systems affect the feasibility of parties' options to combine *de jure* opposition with *de facto* cooperation. Luebbert also reminds us that party leaders must retain the support of parliamentary party and extra-parliamentary activists and must maintain party unity—achievements sometimes best accomplished from outside a governing coalition. Such observations suggest another failing of most coalitional models—an inability to allow for the possibility of a party choosing to be in a role supporting the governing coalition (*cf.* Lijphart, 1984).

Still another type of limitation of many coalitional models is their plethora of predicted coalitions. While there are statistical models that do allow one to compare the predictive fit of models that make unique or relatively few predictions with those offering many potential outcomes (see, *e.g.*, Winer 1979; Franklin and Mackie 1984), it would be useful if every model made relatively specific predictions. On the other hand, there are situations where there is a unique coalitional prediction but a multiplicity of real-world outcomes. In Italy, for example, coalitions form, then dissolve, and are replaced by other coalitions without any new election taking place or any change in the number of seats held by parties in the parliament. Models such as those of Grofman (1982), which make unique predictions, have been criticized (Rapoport and Weg 1986) for exactly this reason. However, in most countries, cabinet coalitions do almost always remain in place until a new election, and in such cases a model that makes a unique prediction is desirable. Thus, it would seem desirable to identify different models as being appropriate either for different situations, or to have a single model which somehow can "tell" when (in what countries, and in what contexts) it ought to make a unique prediction and when there must be multiple predictions (*cf.* Luebbert 1986). Alternatively, when multiple coalitions form even though seats are unchanged, it is possible to introduce stochastic error to account for the likelihood that party locations are known only imprecisely or are subject to "random" fluctuation (Straffin and Grofman 1984; Grofman, Straffin and Noviello, this volume).

A final important limitation of applications of most of the earliest models of coalition formation is that their use is limited to cases with one-dimensional policy spaces. Many European party systems can best be characterized in multidimensional terms (Budge, Robertson, and Hearl, 1987). Recent models which are applicable to multi-dimensional as well as undimensional policy spaces include the "competitive solution" (McKelvey, Ordeshook and Winer 1978; Winer 1979; Ordeshook and Winer 1980); game-theoretic models that use bargaining set notions (Aumann and Maschler 1964; Schofield 1982; Schofield and Laver 1985) or the concept of the core of voting games (Schofield 1986; Schofield, Grofman and Feld 1986; Schofield and Laver 1987; Laver and Schofield 1990; Schofield 1993a,b); the inertial model of Owen and Grofman (1984); Grofman's (1982) model of protocoalition formation; and Rapoport

and Weg's (1986) multi-criterion approach. A useful review of the properties of a number of some of these "third generation" models is found in Straffin and Grofman (1984) and Schofield (1993a).

In this paper, I explicate the properties of one simple policy-driven dynamic model (Grofman 1982) of protocoalition formation in the multidimensional context and then offer a modified form of this model which I believe substantially improves its predictive power. I compare the predictive power of the original model, which yields a unique prediction for each situation, to that of several other coalition models; then I consider how the model might be modified to cope with multiple coalitions arising from a single election (using data from Italy). The modified protocoalition model addresses the objection of Luebbert (1983) to models which require winning coalitions to form (and thus cannot cope with minority government).

I also wish to argue in this paper for the importance of using standing coalitions, *not* governing coalitions, as the best data source with which to test policy-driven models of cabinet formation. The reason that supporting parties are usually omitted from consideration in tests of coalition formation models is that cabinet membership symbolizes for a party a commitment to publicly participate in the governing coalition, and an explicit bargain among the parties in the governing coalition as to the coalition's membership and division of cabinet responsibilities. Cabinet and subcabinet posts are customarily taken to be the currency in which parties are rewarded for their agreement to participate in the governing coalition. Thus, absence of a party from the governing coalition is taken to indicate absence of a party from the winning coalition. However, if we take the "spoils of victory" to be not simply jobs but, at least equally importantly, government policies to one's liking, then we can take support in a vote of confidence to indicate a party's preference for continuing the policies of the governing coalition. Parties which offer such support are obviously benefiting from the governing coalition, even if they do not wish for themselves (or the parties in the governing coalition do not wish to give them) cabinet or sub-cabinet posts. It is the standing coalition rather than the governing coalition which is most likely to be ideologically-connected, because idiosyncratic factors may keep a given party out of the governing coalition, even though its ideological position makes it very likely, because of policy similarities, to support the governing coalition in a vote of confidence.

12.2 A Dynamic Model of Protocoalition Formation

In some Western European countries (*e.g.*, Italy, France, and Denmark) there appears to be strong support for the view that ideologically connected coalitions predominate. (See Axelrod 1970; Damgaard 1969; Rosenthal 1969; Morgan 1976; DeSwaan and Mokken 1980.) That the predominance of such connected coalitions is due to some form of policy/ideological diversity minimization is, I believe, also well supported—although the evidence here is more

indirect. (See the discussions in DeSwaan 1973; Flanagan 1973; Budge and Farlie 1978.) Certainly the notion that political parties seek to join a coalition whose policy and/or ideological center is one from which they are not too far distant is an intuitively plausible one. Operationalizing such a notion however can be done in different ways. In this paper I use the dynamic model of protocoalition formation in m-space postulated in Grofman (1982).

In this use of the model, it is assumed that political parties are locatable as points in some m-dimensional space with metric properties.[4] Each political party is assumed to evaluate the relative desirability of potential coalition partners in terms of the distances of other parties from itself. I assume that each party is a potential member of a protocoalition, and that each party or protocoalition seeks to attract others into a coalition with it so as to eventually form a winning coalition. (Later I shall modify this assumption slightly.) Parties will not in general all be of equal weight. The weight of a party is assumed to be the number of seats it has in the legislature. I posit a multistage process of protocoalition formation. At stage 1 each political party attempts to form a protocoalition of itself and the party nearest to it in m-space. Nearness is defined in terms of proximity based on weighted distance, $\frac{dw_j}{w_i+w_j}$; *i.e.*, the proximity of actor i with weight w_i to actor j with weight w_j, when these two are separated by a distance d. Hence, although distance is of course symmetric, proximity is not symmetric, except for the special case where $w_i = w_j$.

If and only if party i is the party closest to party j and party j is also the party closest to party i, where closeness is in terms of weighted distance, do the two join together in a protocoalition.[5] The reason for using a proximity measure which is a function of both distance and (relative) weight is simple. I believe that the position between a strong (high-weight) actor and a weak (low-weight) actor that the protocoalition will adopt in m-space will reflect the relative weights of the actors and thus will be closer to the stronger than the weaker actor's ideal policy position. The proximity measure captures the notion that if weak actor i joins strong actor j, then i must move further from his ideal point than j does from his ideal point; *i.e.*, the proximity of i to j is a measure of the distance actor i would "travel" if he were to join a protocoalition with actor j.

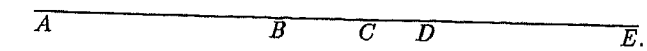
If no winning coalition is formed at stage 1, stage 2 begins. Once a protocoalition is formed, it is assumed to act as a single party, although determining the center of gravity of subsequent larger protocoalitions it may enter will be based on the weight of the parties in it. Parties that do not form pairs are "isolate" protocoalitions. At stage 2, the process I have discussed for stage 1 continues at the protocoalition level; *i.e.*, each protocoalition seeks to merge with exactly one protocoalition. Protocoalition I joins protocoalition J if and only if the center of gravity of protocoalition I in ideological space is closest

[4]The protocoalition model is potentially applicable to coalition processes in a variety of areas in addition to cabinet formation.

[5]I assume, for simplicity, that distances are sufficiently "finely" measured so as to eliminate the possibility of ties.

to the center of gravity of protocoalition $I + J$, *and* if the center of gravity of the protocoalition J is closest to the center of gravity of protocoalition $I + J$. If no winning coalition is formed, stage 3 begins. The process continues until a winning coalition is formed.

The model posited above emphasizes the reciprocity required for a coalition to form—both partners must have no other coalitions which they prefer to join and which it is feasible for them to join. We may illustrate this model of protocoalition formation with a simple example in unidimensional space. Let n (the number of parties) be 5, and let K (the resources needed for a winning coalition) be a simple majority, where all parties begin with equal weight.



Consider the parties arrayed in ideological space as above:

Stage 1: B and C join together as do D and E. A is left "isolate," since its "natural" protocoalition partner B prefers to join a protocoalition with C.

Stage 2: The protocoalitions of $B + C$ and $D + E$ coalesce to form a winning coalition. A remains isolated since its "natural" protocoalition partner $B + C$ prefers to merge with $D + E$.

This example leads us to assert two interesting results:

Result 1: The process of protocoalition formation posited above need not lead to a minimal winning coalition.

Of course, if the center of gravity of each of the coalitions $A + B + C$ and $B + C$ were closer than the center of gravity of the coalition $(B + C) + (D + E)$, then a minimal winning coalition $(A + B + C)$ would form. Such a coalition would form if the distance between A and the midpoint of $B + C$ were less than $\frac{3}{2}$ the distance between the midpoints of $B + C$ and $D + E$. Because $B + C$ is a two-person protocoalition, the protocoalition $B + C$ is twice as important (has twice the weight) as the protocoalition A in determining the center of gravity of the coalition $A + (B + C)$.

Result 2: The process of protocoalition formation posited above need not lead to a winning coalition whose center of gravity is the median party, C, in the overall space; nor must the median party be the party closest to the coalition's center of gravity.

Indeed, in the example I have given, in no possible winning coalition is the center of gravity located in the median party, C. In the coalition $A + (B + C)$, B is closer to the coalition's center of gravity than is C; and in coalition $(B + C) + (D + E)$, D is closer to the coalition's center of gravity than is C.

In the protocoalition model it is demonstrated that

Result 3: The process of protocoalition formation posited above must ultimately lead to a winning coalition and can never lead to deadlock;[6] and

Result 4: In unidimensional space, the process of protocoalition formation posited above necessarily generates connected protocoalitions; *i.e.*, if two parties, I and K, are to be found in some protocoalition, any parties "between" them in the space must always be in the protocoalition.

In order to see if Result 4 can be generalized to the m-dimensional case, we require a notion of "connectedness" applicable to m-space. In unidimensional space, a (proto)coalition can be said to be connected when it includes all actors on any line segment connecting any two members. A natural generalization of this to m-space follows:

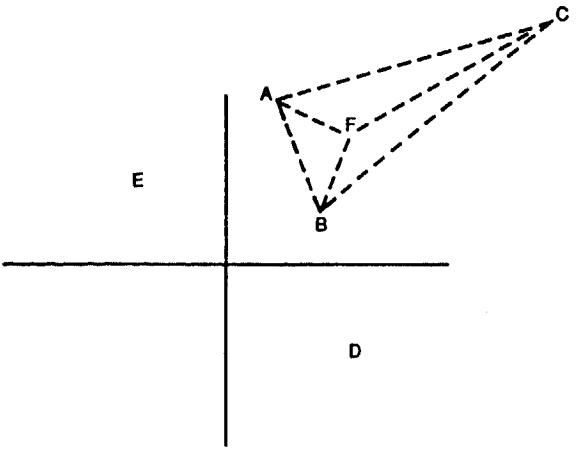


Figure 1. Model of m-connectedness.[7]

Definition: *A* (proto)coalition shall be said to be connected in m-space (or, equivalently, m-connected) when it includes all actors in or on any convex hull defined by any $m+1$ members of the (proto)coalition.

As far as I am aware, this generalization of the connectedness notion was first proposed by the protocoalition model. I believe the only author previous to Grofman (1982) to have looked at connectedness in m-space was Rosenthal (1969), who used a graph theory model in which connected subgraphs indicate relative closeness in an otherwise ordinal and unidimensional space. Of course for $m = 1$, "m connectedness" is simply "connectedness".

Our definition of m-connectedness can be made clear by a simple two-

[6] Grofman proved this result for $n = 3, 4$, and 5. The general case result given in Grofman (1982) was independently derived by Philip Straffin and Christopher Nevison. See Straffin and Grofman (1984).

[7] From Grofman, B., 1982, p. 81.

dimensional example with six actors (see Figure 1) taken from Grofman (1982).

In this example the coalition $\{A, B, C, F\}$ is 2-connected, since there are no actors not themselves members of the coalition in any of the 3 convex hulls defined by any 3 of the 4 actors in the coalition (see Figure 1). On the other hand, the coalition $\{A, B, C\}$ would not be 2-connected, since Actor F is not a member though he is within the convex hull defined by A, B, and C.

It is important to see that m-connectedness need not imply $(m-1)$-connectedness. If we look at the actors in the two-dimensional example in Figure 1 above and consider their projections onto the one-dimensional space defined by the x-axis, we obtain a unidimensional alignment as follows:

E A B F D C.

Although the coalition $\{A, B, F, C\}$ is connected in two-dimensional space, it is not connected in the one-dimensional space defined by the projections onto the x-axis, or in the one-dimensional space defined by projections onto the y-axis, where the coalition alignment is C A F E B D.

This example leads us to consider another extension of the connectedness notion. We may define full-connectedness as follows.

Definition: A (proto)coalition shall be said to be fully connected in m-space (or simply, fully-connected) when it is j-connected for all integers: $0 < j \leq m$.

In the example given in Figure 1, $\{A, B, E, F\}$ would be a fully connected (proto)coalition, while $\{A, B, C, F\}$ would not be.

"m"-connectedness and full-connectedness are, I believe, concepts of considerable potential empirical importance, since if a coalition is not m-connected, there are, given ideological location, "natural" members of the coalition who are not part of it. Such actors might be expected to vociferously seek their "natural" rewards or to force some kind of coalition realignment. Similarly, if a (proto)coalition is not fully connected, there necessarily exists a dimension (or dimensions) of choice which has the possibility of splitting the coalition, since for choices contained in such a dimension(s), some coalition members will be closer to actors outside the coalition than to actors within it.

12.3 Three Illustrative Tests of the Protocoalition Model

Grofman (1982) provides some illustrative tests of his proto-coalition model using data on two-dimensional party arrays from three countries; Norway (1961, 1965, 1969), Denmark (1971, 1973), and Germany (1969, 1972).[8]

[8] Tables 1, 2, 3 of Chapter 13 of this volume compare the results of the proto-coalition model with three other coalition models. These tables also show the results of modifying the model by making the formation process stochastic. See these tables for the full names of the various parties.

In each case elections were chosen on the basis of the availability of a spatial map of party locations, produced by country-specialist scholars.

Norway. For all three elections in Norway, the winning coalitions are correctly predicted by the model. They are 2-connected, minimal winning, and connected in 1-space with respect to projections onto the x-axis, but not with respect to the y-axis. Moreover, the model gives rise to a considerably more focused prediction than others in the literature. For example, there are four other minimal winning coalitions that could have formed in 1965 and 1969 and five in 1961. The coalition predicted is the unique minimal resources coalition in 1965 and 1969 and one of the two such in 1961. It is one of the minimal winning coalitions with the fewest actors in 1961 but is not a member of that set in 1965 and 1969. (See Table 1, Chapter 13 of this volume.)

Clearly, no model is any better than the data used to generate it, and identifying parties' spatial locations has hitherto been an inexact science, although this should change with the availability of the data from the Party Manifesto Project (Budge, Robertson and Hearl 1987). In this chapter, however, I have replicated the analysis (first performed in Grofman 1982) of these three Norwegian elections using other spatial representations of the Norwegian party system and obtained virtually identical results. I used the model to predict the 1969 cabinet coalition from a two-dimensional representation for 1969 survey data on voters given by Converse and Valen (1971) and to predict the 1961 and 1963 coalitions from a two-dimensional representation based on a nonmetric scaling analysis performed by Groennings (1970) on 1963 survey data. My predictions remained unchanged, and only with the Groennings (1970) spatial representation am I able to find even a different protocoalitional dynamic. Thus, at least in the Norwegian case the model does not appear unduly sensitive to alternative methods in specifying party space. This is particularly important because in the Groennings (1970) array the Labor Party is actually shown as (slightly) closer to the Liberals than to the Socialist People's Party, and the protocoalition model (based on weighted distance) does not predict a Liberal-Labor coalition.

Table 1. Legislative Seat and Coalition Outcomes In Norway in 1961, 1965, and 1969

	SocP	*Lab*	*Chr*	*Lib*	*Cen*	*Con*
			1961			
No. of seats	2	74	15	14	16	29
Observed coalition	*	*				
			1965			
No. of seats		68	13	18	18	31
Observed coalition			*	*	*	*
			1969			
No. of seats		74	14	13	20	29
Observed coalition			*	*	*	*

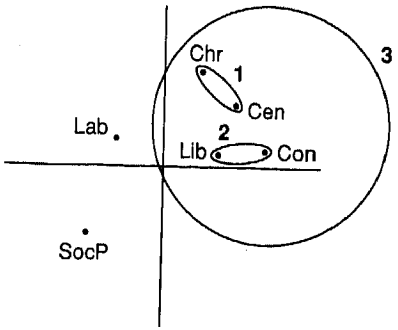


Figure 2. Perceived Party Locations in Norway, 1965—Two-Dimensional Solution. (Adopted from Converse and Valen, Figure 4, p. 134.) Numbered circles represent the stages of protocoalition formation in both 1965, and 1969. In 1961 the process requires only one stage—union between the Socialist People's Party and the Labor Party. (The Communist Party has been omitted because it was not seen as a viable coalition partner.) See Table 1, Chapter 13 for party names.

Denmark. In Denmark, for 1971, treating the parliamentary support coalition as the winning coalition, the Grofman (1982) prediction is confirmed by the data. The coalition predicted is among five possible minimal winning coalitions. It is also the unique minimal resource coalition and one of the minimal winning coalitions with the least possible number of parties. For Denmark in 1973 (again treating the support party as part of the standing coalition) the protocoalition model again yields a confirmed prediction which is distinct from that of any other coalition models and far more specific than that of most other coalition theory models (See Table 2).[9]

Table 2. Legislative and Coalition Outcomes In the 1971 and 1973 Elections in Denmark (Winer, 1979).

	SP	*Com*	*SD*	*Tax*	*Prog*	*CtrD*	*RdL*	*Con*	*ChP*	*AgL*
					1971					
No. of seats	17		70				27	31		30
Coalition	*		*							
					1973					
No. of seats	11	6	46	5	28	14	20	16	7	22
Coalition					*	*	*	*	*	*

[9]In 1971 and 1973, eighty-eight seats were needed to form a majority government in Denmark. In 1971 only five parties obtained seats in the legislature, and the cabinet "coalition" consisted of a one-party minority government. However, the minority party, the Social Democrats, had the parliamentary support of the Socialist People's Party, and I have treated those two parties as in a coalition together, and as effectively comprising a minimal winning coalition.

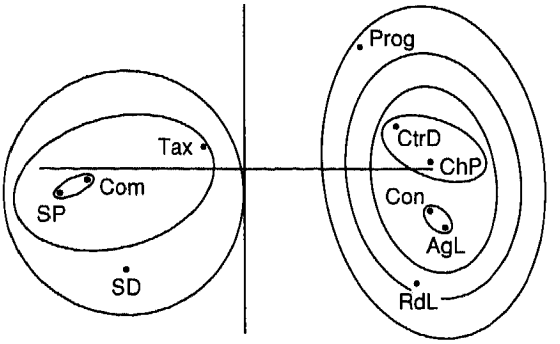


Figure 3. Perceived Party Locations in Denmark, 1973. (Spatial configuration from Rusk and Borre (1974, Figure 3, p. 341). Ellipses represent protocoalition formation stages after the 1973 election. (Adapted from Grofman 1982.)

In 1973 all ten parties held legislative seats, with the Agrarian Liberals forming a one-party minority government. However, by 1974 five other parties were providing parliamentary support for key elements of the Agrarian Liberal program, especially its economic policy. I have treated these parties as in a coalition together. I might note that the Progress Party was the last to join the support coalition and only joined on certain issues.

The coalitions predicted by the model were 2-connected. If we look at the projections onto the x-axis, the predicted coalitions were connected in 1-space as well as in 2-space; but this is not true if we look at projections onto the y-axis. (See Figure 3.)

Germany. For Germany, the protocoalition model gives rise to identical predictions for 1969 and 1972. The coalition I predict is 2-connected; it is connected in 1-space with respect to the x axis but not with respect to the y axis. For both elections the prediction of a specific minimal winning coalition is confirmed by the data. In both years there are three other possible minimal winning coalitions. (See Table 3 of Chapter 13 for the predictions of the various coalition models for both of the German elections.) Despite the limited number of actors, and the rather simple spatial array, most other models come up with multiple predictions.

I do not, however, wish to make too much of the German results, since in 1972 the *FDP* ran as the incumbent partner of the *SPD*, and I am using 1972 voter perceptions to locate the parties. Moreover, even in 1969 the *SPD* – *FDP* coalition might have been seen by many of the voters to be predetermined. Furthermore, it is misleading in this period to really treat the *CDU* and *CSU* as independent parties.

Table 3. Legislative Seats and Coalition Outcomes In the 1969 and 1972 Elections In Germany (Winer 1979)

	SPD	*FDP*	*CSU*	*CDU*
			1969	
No. of seats	237	31	49	201
Observed coalition	*	*		
			1972	
No. of seats	230	41	48	177
Observed coalition	*	*		

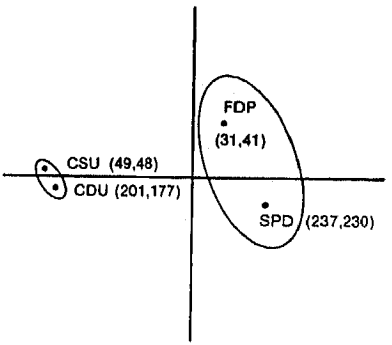


Figure 4. Perceived Party Locations in the Federal Republic of Germany, 1969. (Spatial configuration from Winer 1979 and Grofman, 1982, p. 85.)

The data for Germany, Denmark and Norway considered above strongly support the basic point that ideological factors and not just coalitional resources or number of actors are important in determining coalitional alignments. Indeed, I believe this point to be more important than the fact that the proto-coalition model predicted these coalitions perfectly, since some other, as yet unknown, policy-driven model might in principle have done likewise, even though it posited a quite different form of protocoalitional dynamics.

I now wish to briefly consider how the unique predictions of the protocoalition model might be modified to deal with situations such as Italy, where no unique coalitional prediction can be correct, because a given parliamentary lineup is compatible with several different successive patterns of coalitional alliances as governments rise and fall without a new election being called.

12.4 Italian Cabinet Coalitions 1946-1982

Table 1 presented in Chapter 15 of this volume shows the data on Italian cabinet coalitions from 1946 through 1992. We use the definition of a distinct cabinet coalition as one which occurs either after a general election, or after

a change in prime minister, or after a change in the party composition of the cabinet, or after a resignation of a prime minister followed by a re-formation of the same governing coalition. We examine the period 1946-1982, during which time there are 44 distinct coalitions, even though there were only nine elections. We take the members of the standing coalition to be the governing coalition (*i.e.*, the parties represented in the cabinet) when that is a majority coalition, and the governing plus support coalition otherwise (those parties without cabinet seats who regularly support the governing coalition on votes of confidence and on other important policy matters). Using the maps I have constructed (available upon request from the author, adapted from Marradi 1982 and Morgan 1977), I find 37 of the 44 post-WWII standing coalitions to be connected on the left-right dimension (x-axis) but only 6 to be connected on the clerical-secular dimension (y-axis). Only 3 standing coalitions are minimal winning.[10]

For Italy, with an average of over 3 distinct coalitions occurring during each election period, to generate a single prediction from the protocoalition model seems a waste of time, since, at best, it will be right less than one third of the time, even if every coalition it predicted actually formed. Also, the party-space configurations I used are sufficiently subjective and *ad-hoc* that assuming they possess the accuracy required to calculate the nearest neighbors in the protocoalitional model seems misguided. Nonetheless, I have gone through the exercise in an informal manner, and it appears that in seven of the nine election years at least one of the obtained outcomes was predicted by the protocoalition model. (See the next chapter, where this analysis is extended to the case where party locations are subject to a stochastic disturbance.)

The protocoalition model posits that parties seek to join a coalition whose ideological center is one from which they are not too far distant, and that once a group of parties has coalesced into a protocoalition, its policy will represent a compromise among the preferred policy positions (on each dimension) of the protocoalition partners–probably weighted to favor the stronger parties. Clearly, under those assumptions, parties not already in the protocoalition whose ideal points are within or near the convex hull defined by the locations of the protocoalition members have every reason either to join the protocoalition, or, if (for a variety of reasons) publicly joining the coalition may not be desirable or even possible.[11] One can still expect such parties to support

[10] I find the predictive success of the Axelrod (1970) connected coalition model for post-war Italy to be somewhat less than other authors (*e.g.*, DeSwaan, 1973; Morgan, 1976) have reported, because I (following Marradi, 1982) count rightist parties such as the Liberal Party in 1946-47 and the Republican Party in 1969-70 and 1976 as potential coalition members whose absence, with respect to the left-right dimension, can make a coalition non-connected. Also, the practice of counting support parties as part of the standing coalition if the governing coalition is not a winning coalition leads us to label the Tambroni government of 1960 as non-connected. (See Table 2, Chapter 15, for the names and acronyms of the Italian parties, and Table 1, Chapter 15, for coalition type and duration.)

[11] Some parties are not considered "coalition-worthy" ("Koalitionsfahig," Damgaard, 1973). This "conventio exclusandum" (Georgio Freddi, personal communication) limits the feasible space of coalition-making. Also some parties may not wish to have cabinet representation because they wish to maintain an identity with the voters as parties *not* responsible for whatever mess the current government may be in.

the policies of the coalition to which they are internal. The policies of that coalition are likely to be close to their own preferred positions so that they will find the coalition a generally compatible one. Moreover, their participation can only enhance the likelihood that policies close to the ones they most prefer will be followed. Thus, in Italy, if a 2-dimensional representation of party space is reasonable, I would expect that 2-connected standing coalitions would form. All 44 standing coalitions in post-WWII Italy are 2-connected. Moreover, this is not a vacuous prediction, since there were often a number of winning coalitions (coalitions sometimes closer to minimal winning) that could have formed after the 1976 election but would not have been 2-connected, *e.g.*, a coalition of the Socialists, Republicans and Christian Democrats.

Thus, even if the specific predictions of the proto-coalition model are of only limited value in the case of Italy, the general notion of 2-connectedness seems to have some relevance.

12.5 Conclusions

The principal problem with the cabinet coalition literature is that it is three literatures, not one: (1) a literature on models of coalition formation, (2) a literature on the distribution of coalition payoffs, and (3) a literature on cabinet duration. Each of these literatures contains a number of excellent articles or books, but there is no overarching theoretical framework which ties coalitional structures, payoffs, and longevity together. In my view such a theory will need to recognize that parties are concerned not merely with being in a winning coalition, but also are concerned both with particular discrete payoffs in terms of portfolios and with expected policy outcomes. Moreover, only if we recognize the multiple options that parties may have (*e.g.*, to be in the governing coalition, to be in the support coalition, to be in opposition) and the mixed incentives that favor or disfavor each option, along with the previous history of coalitional alignments, can we understand the dynamics of the coalition process in terms of long-term choices.

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