

FURTHER DEVELOPMENT OF A THEORY  
OF COALITIONS IN THE TRIAD

THEODORE CAPLOW

Reprinted for private circulation from  
THE AMERICAN JOURNAL OF SOCIOLOGY  
Vol. LXIV, No. 5, March 1959  
Copyright 1959 by the University of Chicago  
PRINTED IN U.S.A.

# FURTHER DEVELOPMENT OF A THEORY OF COALITIONS IN THE TRIAD

THEODORE CAPLOW

## ABSTRACT

A previously presented model of the triad whose members are not identical in power and in which the formation of coalitions depends predictably upon the initial distribution of power is here extended by the addition, first, of two new types to the six originally described, and, second, of three situations—continuous, episodic, and terminal—which correspond to different patterns of coalition formation in given types of triad. Evidence from a number of recent studies is discussed in relation to the model.

Sometime ago the writer proposed a model for the strategy which governs the formation of coalitions in the triad under certain conditions.<sup>1</sup> This theory drew upon the existing empirical evidence,<sup>2</sup> studies which, however, had been designed for somewhat different

attention to a neglected feature, namely, that the formation of given coalitions depends upon the initial distribution of power in the triad and, other things being equal, may be predicted under certain assumptions when the initial distribution of power is known. Six types of triad were described, those numbered up to Type 6 in Figure 1. The quantity denoted by the relative size of the circles and by the signs of equality and inequality in the equations is strength or power. The expected coalitions are indicated by double arrows. The formation of coalitions in the six types of triad were analyzed under the following assumptions:

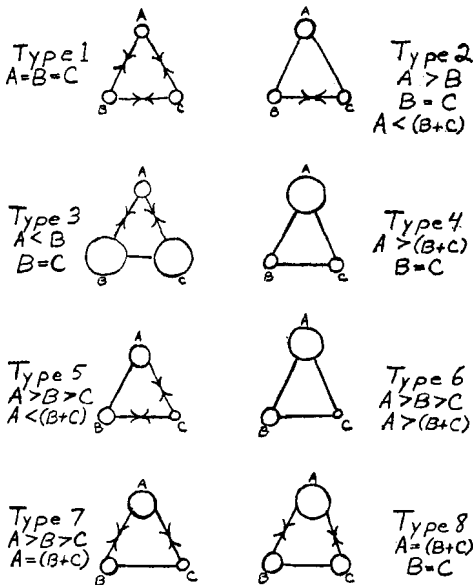


FIG. 1

purposes, and, since their findings did not bear directly upon the model, they were illustrative rather than corroborative.

The purpose of the earlier paper was to examine the model of the triad whose members are not identical in power and to call

<sup>1</sup> Theodore Caplow, "A Theory of Coalitions in the Triad," *American Sociological Review*, XXI (August, 1956), 489-93.

- I. Members of a triad may differ in strength. A stronger member can control a weaker member and will seek to do so.
- II. Each member of the triad seeks control over the others. Control over two others is preferred to control over one other. Control over one other is preferred to control over none.
- III. The strength of the coalition is equal to the strength of its two members.

<sup>2</sup> Theodore M. Mills, "Power Relations in Three-Person Groups," *American Sociological Review*, XVIII (August, 1953), 355; see also Mills, "The Coalition Pattern in Three-Person Groups," *ibid.*, XIX (December, 1954), 663; Fred L. Strodbeck, "The Family as a Three-Person Group," *American Sociological Review*, XIX (February, 1954), 23-29; E. Paul Torrance, "Some Consequences of Power Differences on Decision Making in Permanent and Temporary Three-Man Groups," in A. Paul Hare, Edgar F. Borgatta, Robert F. Bales (eds.), *Small Groups: Studies in Social Interaction* (New York: Alfred A. Knopf, 1955), pp. 488-89; Robert F. Bales and Edgar F. Borgatta, "Size of Group as a Factor in the Interaction Profile," *American Sociological Review*, XVIII (August, 1953), 396-413.

IV. The formation of coalitions takes place in an existing triad, so there is a pre-coalitional condition in every triad. Any attempt by a stronger member to coerce a weaker member in the pre-coalition condition will provoke the formation of a coalition to oppose the coercion.

Since that time new evidence has come to hand, and the critical comments of a number of investigators working upon triad problems have been brought to bear upon the original model. The purpose of the present paper is to present an amplified version of the theory of coalitions in the triad to cover a wider range of situations.

#### TWO MORE TRIADIC TYPES

The first extension of the model now proposed is based on the observation by More that two fundamental types of the triad whose members differ in strength were overlooked in the original presentation.<sup>3</sup> This pair of types is included in Figure 1, numbered 7 and 8, wherein the combined strength of B and C is equal to A. They are by no means insignificant. Indeed, because of the tendency for triads in which power is evenly balanced to be stable, it is conceivable that there are as many empirical applications of Types 7 and 8 as of the others combined.

#### SITUATIONAL STRATEGIES

Another proposed extension of the original model originates in the recognition of at least three different situations in which coalitions may occur and of the fact that, for some of the triads shown in Figure 1, a different set of strategies governs the formation of coalitions in each of the situations described below, namely:

*Continuous.*—Here the object of a coalition is to control the joint activity of the triad and to secure control over rewards which are found within the situation itself. Compare the sibling triad in childhood.

*Episodic.*—The membership of the triad is stable, and the contest for power continues over an extended time, but the object of coalition is to secure an advantage in episodic dis-

tributions of rewards which occur periodically and under predetermined conditions. A recently studied example<sup>4</sup> is the triad of two congressional parties and the President, the episodes of distribution being the votes and vetoes on particular bills.

*Terminal.*—The coalition is directed toward a single redistribution of power—terminal—either because it dissolves the triad or because it leads to a state of equilibrium which precludes further redistributions. The best example and most important case is that composed of three hostile sovereign powers contemplating war.

It will at once be apparent that the assumptions set forth in the earlier version of this theory were applicable to the continuous situation.

In order to take account of the formation of coalitions in episodic or terminal situations, we must change Assumption II. For episodic situations it will be:

Each member of the triad seeks a position of advantage with respect to each distribution of reward. A larger share of reward is preferred to a smaller share; any share is preferred to no share.

The effect of adopting this change in Assumption II is to convert the triad in which the differential strength of the participants acts continuously, as in the cases diagrammed in Figure 1, to the simpler state of affairs where winning and losing occur in separate episodes. In the episodic situation coalitions will always be formed except in Types 4 and 6. The necessity to enter a coalition in order to win at all will be clearly perceived, and it will suggest an equal distribution of shares. There will be no coalitions at all in Types 4 and 6, where the stronger member of the triad will invariably win. There will also be a tendency for coalitions to be limited to a particular episode and to be more changeable than in a continuous situation.

Another modification of Assumption II brings us to the terminal situation. This reads as follows:

<sup>4</sup>R. Duncan Luce and Arnold A. Rogow, "A Game Theoretical Analysis of Congressional Power Distributions for a Stable Two-Party System," *Behavioral Science*, I (April, 1956), 83-95.

<sup>3</sup>Douglas More, private communication.

Each member of the triad seeks to destroy the others and to add their strength to his own. A large increase in strength is preferred to a small increase in strength, a small increase is preferred to no increase, no increase is preferred to a loss, and a loss of strength is preferred to complete destruction.

The striking thing about the terminal situation is that coalitions are only possible between equals or potential equals. The reason why this is so can be seen by examining, for example, Type 5. If a coalition of B and C is successful in partitioning A, it must be on the basis of C's receiving a share sufficiently larger to bring him up to dyadic equality with B. Otherwise, once the coalition has completed the reduction and partition of A, B, being stronger, will proceed to

two unequal members of the triad is necessary to avert destruction by a stronger member, A, but is not sufficient to accomplish destruction of the stronger member, A, or to put the weaker member of the coalition, C, into jeopardy.

Table 1 shows the expected coalitions for the eight types of triads in the continuous, episodic, and terminal situations. The three situations involve with very different coalition strategies. A general distinction can be made between the continuous situation in which the only risk in a decision not to enter a coalition is the danger of being excluded from the coalition of the two others, and where even this may be reduced by an agreement that no coalitions will be formed;<sup>5</sup> or the episodic situation, where refusal of a prof-

TABLE 1  
EXPECTED COALITIONS IN TRIADS OF VARYING INITIAL STRENGTH

TYPE	DESCRIPTION	SITUATION		
		Continuous	Episodic	Terminal
1.....	$A=B=C$	Any	Any	Any
2.....	$A>B, B=C, A<(B+C)$	BC	Any	BC
3.....	$A<B, B=C$	AB or AC	Any	BC
4.....	$A>(B+C), B=C$	None	None	None
5.....	$A>B>C, A<(B+C)$	BC or AC*	Any	None
6.....	$A>B>C, A>(B+C)$	None	None	None
7.....	$A>B>C, A=(B+C)$	AB or AC*	AB or AC*	BC
8.....	$A=(B+C), B=C$	AB or AC	AB or AC	BC

\* Adapted from W. Edgar Vinacke and Abe Arkoff, "An Experimental Study of Coalitions in the Triad," *American Sociological Review*, XXII (August, 1957), 409, Table 1.

reduce and absorb C. C would therefore be unwilling to enter the coalition in the first place. It is unlikely, however, that B will agree to a division of spoils which gives the lion's share to the initially weaker C. Similar considerations apply to the potential coalitions of AB and BC in Type 5. It may be argued, of course, that history presents many cases of achieved coalitions of this kind, leading to the ultimate destruction of the weaker partner by the stronger, for instance, the subjugation of their Indian allies by the Spaniards after Cortez' conquest of the Aztecs. In many of these cases the weaker partner may have entered the coalition under the misconception that he was equal or superior in strength to his partner. The other possibility, frequently realized in history, is that the weaker coalition partner identified the situation as belonging to Type 7, in which a coalition of

ferred coalition leads to almost certain loss; or the terminal situation, in which abstention from a coalition carries a high risk of destruction. The probability that *some* coalition will be formed will be higher in terminal than in episodic situations and higher in episodic than in continuous situations of the same type.

In Type 1, of course, the distribution of strength being equal, there is no reason to suppose any one coalition more likely than another. Types 4 and 6 do not admit the formation of any coalition within our assumptions. Alliances may occur between the weak members, or between the strong member and a weak member; but, whatever purposes these alliances may have, they are not coalitions in the sense meant here, since they

<sup>5</sup> Some of the subjects of Vinacke and Arkoff did, in fact, devise just this sort of agreement.

cannot affect the outcome based upon differential strength.

In all the remaining types there is some difference in coalition strategy from one situation to another. In Type 3, for example, in the continuous situation, it will readily be seen that A can strengthen his situation by forming a coalition with either B or C and will be welcomed as an ally by either B or C. On the other hand, if B joins C, he does not improve his pre-coalition position of equality with C and superiority to A. His only motive to enter the coalition with C is to block the coalition AC. However, C's position is identical with B, and he, too, will prefer A to B as an ally. Thus there are two likely coalitions, AB and AC. By contrast, in the episodic situation, there is no possibility that either A or B or C can win a particular contest without joining forces with one of the others, and, since they are equally strong in this sense, it makes no difference that B and C are stronger than A taken individually. Any two of the three may form a successful coalition, and over an extended period of time involving many episodes all the possible coalitions are likely to occur. In the terminal situation, however, there is a single most likely coalition between the equals B and C to achieve the partition of A, and a subsequent dyadic equilibrium between B and C. There is no reason for A to enter a coalition with either B or C, unless by an unequal division of spoils he is to be brought up to the strength of his partner. Otherwise, as previously noted, he faces destruction by his stronger partner after the triad has become a dyad.<sup>6</sup>

In Type 5, in the continuous situation, the likely coalitions are BC or AC, since A seeks to join both B and C, and C seeks to join both A and B, but B has no incentive to enter a coalition with A, and A has a very strong incentive to enter a coalition with C. The episodic situation is again resolved on

<sup>6</sup> It may be surmised that the probability of one of the stronger members inviting A into a coalition with the inducement of an uneven distribution of spoils, which will bring A up to the strength of his partner, depends upon the exact distribution of quantities of strength among the three members.

“rational” grounds by each member's awareness that either coalition partner is equally advantageous. In the terminal situation it is unlikely that any coalition will be formed, since all coalitions in Type 5 involve unequals, and, as we have already seen, the weaker coalition partner in a terminal situation faces ultimate destruction.

In Types 7 and 8, in the continuous situation, the combined strength of B and C is exactly equal to A, so that no effective coalition of B and C is strategically possible. In other words, although a coalition of B and C can block the dominance of A, it is not sufficient to control the situation, and, therefore, the probable coalitions under the standard assumptions are AB or AC. The same may be said of the episodic situation, with the qualification that the defensive coalition, BC, may be attractive in special cases where the rules allow an even distribution of the reward. In the terminal situation, however, the coalition BC is the only means by which B and C can avert their destruction by A.

#### THE CHOICE BETWEEN NON-IDENTICAL COALITIONS

What additional assumptions are necessary to explain the selection of one or the other of the non-identical coalitions in the starred cells of Table 1? Since we are concerned here only with strategies based upon the initial distribution of strength, there is no way of explaining the selection between identical alternatives, like AB and AC in Type 3, without going beyond the model. But we can examine the bases of selection in those cases where the alternative coalition partners are not identical in initial strength (i.e., the continuous situation in Types 5 and 7 and the episodic situation in Types 2, 3, 5, and 7). In each of these cases one member of the triad may be considered as the “chooser,” because he is sought as a coalition partner by both the others.<sup>7</sup> Two

<sup>7</sup> As the table shows, there is also a “chooser” in Types 3 and 8, but, since the choice will be made in those cases between potential coalition partners who are identical in strength, it must be made on grounds extraneous to the model.

assumptions, of about equal plausibility, suggest themselves. Either (5a) the "chooser" in a triad seeks the maximum advantage or minimum disadvantage of strength relative to his coalition partner or (5b) the "chooser" in a triad seeks to maximize the strength of the coalition in relation to the excluded member. The former assumption predicts the formation of an AC coalition in the cases listed; the latter, an AB coalition in the same cases. Either assumption may be realistic under particular circumstances.

#### SOME EMPIRICAL EVIDENCE

An experimental test of the original theory was undertaken by Vinacke and Arkoff.<sup>8</sup> A total of thirty triadic groups in a simple experimental game were used to test the hypothesis that the occurrence or non-occurrence of coalitions between particular pairs could be predicted from knowledge of the initial distribution of strength. Initial strength was varied according to a prearranged plan based on our six types. The results were, in general, confirmatory; that is, in Type 1, all possible coalitions occurred a large number of times; in Type 2, coalition BC occurred significantly more often; in Type 3, coalitions AB and AC; in Type 4, no coalitions; in Type 5, coalitions BC and AC; in Type 6, no coalitions. The division of spoils, when a coalition was agreed in advance, was generally proportionate to the relative strength with which the partners entered the coalition, even though their concurrences were equally necessary for success in the game.

Vinacke and Arkoff interpret their findings as reflecting a choice of frames of reference by the subjects. They reason that rational analysis would demonstrate to each player that "(a) in Types 4 and 6 only the strong man can possibly win, and (b) in any of the other four types, any couple can beat the third member, and further, no one can win without forming a coalition."<sup>9</sup> Thus

they regard the initial power distribution as rationally meaningless, for, regardless of his own strength, each player must enter a coalition with someone else, and, in the triads where coalitions are possible, all coalitions will be equally successful. They suggest, therefore, that the observed tendency of the subjects to form coalitions in accordance with their initial strength, and to distribute the spoils in proportion to the contribution of the initial strength to the coalition, is a kind of subjective misperception.

The elements of paradox in this explanation are readily resolved if it is assumed that the subjects tested by Vinacke and Arkoff regarded the game situation as continuous even though the experimenters intended it as episodic. In other words, the subjects identified the distribution of differential strength as part of the rules of the game and perceived that treating the situation as episodic would nullify this distribution, which appeared to them as an important part of the experiment. Their behavior was therefore quite rational. Although we cannot be sure of this, it gains some credibility from the formation of a number of unnecessary and hopeless coalitions in Types 4 and 6—such as might be anticipated if the episodic definition of the situation had been rejected by the subjects (Table 2).

In an earlier laboratory study, Hoffman, Festinger, and Lawrence had demonstrated the tendency for a coalition to form in a situation involving two equal subjects and a somewhat stronger paid participant all engulfed in a competitive task.<sup>10</sup> The experiment, in other words, created triads of Type 2 through manipulation of the situation, and the expected coalition of BC was in fact observed. Corwin set up an experimental game situation in a pilot study to determine whether coalitions of this type occur because the weaker members of the triad are motivated to reduce the advantage of the stronger or because they seek to advance their

<sup>8</sup> W. Edgar Vinacke and Abe Arkoff, "An Experimental Study of Coalitions in the Triad," *American Sociological Review*, XXII (August, 1957), 406-14.

<sup>9</sup> *Ibid.*, p. 407.

<sup>10</sup> Paul J. Hoffman, Leon Festinger, and Douglas Lawrence, "Tendencies toward Group Comparability in Competitive Bargaining," *Human Relations*, VII (1954), 141-57.

own interests.<sup>11</sup> Using an experimental card game which provided an opportunity for a coalition of the two weaker members against the stronger member at each of several stages, he discovered that B and C formed coalitions with A whenever it was advantageous to do so in the early stages of the game; that in the later stages they combined against A even when it was disadvantageous to do so; while in the very last stage of most of the experimental games they competed against each other for second place, even though no second place was recognized in the rules of the game. This points to the possibility of distinguishing continuous, episodic, and terminal situations even in short-run sequences.

spective reports. Nevertheless, they are interesting. The three siblings in each case were designated A, B, and C, in order of age, on the assumptions that the rank order of power would, in most cases, be the same as the rank order of age and that most sibling triads would fall into Type 5.

Of the fifty, twenty-three triads were found to contain coalitions verified by the separate reports of all three siblings. Contrary to expectations, fifteen of them were AB coalitions; seven were BC coalitions; and only one was an AC coalition. Three of the BC coalitions were composed of twins. The most frequent coalition was AB, which is not anticipated by the model for any of the three situations in Type 5. All but two

TABLE 2

COALITIONS FORMED IN THE SIX TYPES OF POWER PATTERNS IN TRIADS  
(Data from the Vinacke-Arkoff Experiments)

Allies	Type 1 (1-1-1)	Type 2 (3-2-2)	Type 3 (1-2-2)	Type 4 (3-1-1)	Type 5 (4-3-2)	Type 6 (4-2-1)
AB.....	33	13	24	11	9	9
AC.....	17	12	40	10	20	13
BC.....	30	64	15	7	59	8
(No coalition).....	10	1	11	62	2	60
Total.....	90	90	90	90	90	90

#### A NEGATIVE CASE

A number of my students at the University of Minnesota undertook to test the original model by a study of coalitions in fifty sibling triads, drawn from the general population of the Twin Cities.<sup>12</sup> As a partial standardization, each member of each triad was interviewed with regard to the interaction, activities, and mutual sentiments of the three siblings during the year when the youngest was ten years old. This ranged from as long as sixteen years ago to the present, and the data have the usual faults of retro-

were coalitions of siblings of the same sex. The age difference between coalition partners was considerably less than between siblings who did not form coalitions, and the coalitions typically persisted into adulthood, with a tendency for the partners to continue their closer association after leaving the parental home.

In this tentative exploration, sibling coalitions appear to be based on similarity of sex, age, and interest rather than on the balance of strength in the triad. This is discouraging because it sets narrower limits to the application of the model than had been hoped. On the other hand, it suggests that the formation of coalitions in triads may continue to follow a predictable pattern under much more complex conditions than those we have discussed.

UNIVERSITY OF MINNESOTA

<sup>11</sup> Ronald G. Corwin, "Some Conditions Which Influence Coalition Behavior in Triads" (seminar paper, prepared for Professor Henry Riecken, University of Minnesota).

<sup>12</sup> Joel E. Gerstl, "Coalitions in the Sibling Triad" (Minneapolis: University of Minnesota, Department of Sociology, 1956). (Mimeographed.)