Differentiation of Boundary Spanning Roles: Labor Negotiations and Implications for Role Conflict

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In this paper we test the hypothesis that boundary spanning is a differentiated function that is not necessarily performed by one person, as assumed in much previous research. Using longitudinal network data collected during labor negotiations, we found that some individuals on the bargaining teams ("representatives") broker ties toward their opponents, while others ("gatekeepers") broker ties from their opponents; and some broker task-oriented ties (measured by flows of advice), while others broker socioemotional ties (measured by flows of trust). Differentiation of trust and advice brokerage roles was strong throughout the negotiations, while differentiation of representative and gatekeeper roles became more distinct as the contract deadline (and increased potential for role conflict) neared. This analytic distinction suggests that role conflict must be examined differently, both conceptually and methodologically, and widens the range of options available for managing potential role conflicts.•

INTRODUCTION

Boundary spanners play a central role in intergroup relations. We know that they are important for conducting exchange between groups (Malinowski, 1922), that they are essential for international diplomacy (Ikle, 1964), and that they help communication between ethnic groups (Heskin and Heffner, 1987). Most importantly for our purposes, we know from the increasing emphasis on organizational boundaries that boundary spanners are essential to the efficient and effective operation of organizations (Thompson, 1967; Aldrich and Herker, 1977; Bradach and Eccles, 1989).

One of the problems most frequently associated with boundary spanning is role conflict. As a boundary spanner interacts with members of different groups, they convey to the boundary spanner the particular expectations that each group has about the boundary spanner's role, including how she should act, what values she should express, and what interests she should represent. Given that each group's values and interests are different, the boundary spanner is likely to experience conflicting expectations of how to fulfill her role. Such role conflict has dysfunctional effects on both the individuals who do the boundary spanning and their relations with others. The individuals suffer from stress due to the difficulty of satisfying both parties, the suspicion shown to them by both sides, and the inherent ambiguity of their role (Van Sell, Brief, and Schuler, 1981); relations with constituents deteriorate, since they worry that the boundary spanner is being influenced more by the other group than their own (Adams, 1976); and organizational effectiveness is damaged by the reduced communication that this conflict produces (Kahn et al., 1964).

While researchers in this tradition have studied extensively these effects of role conflict, they have not examined the structural conditions that are the basis of that conflict. The implicit view is that the boundary spanner is a stable, identifiable, unitary entity, typically an individual. In this paper, by contrast, we demonstrate that the boundary spanning function is actually a composite entity, comprising

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multiple types of relations (including task and socioemotional ties) and two potentially independent roles. If those within a group can disentangle these ties and underlying roles such that they devolve upon different individuals, the prospects for role conflict are greatly diminished. We focus directly on the structure of role conflict rather than its effects.

Drawing on the longitudinal observation of one labor negotiation situation, we provide evidence that such strategies have been pursued. Labor negotiations are an ideal context in which to examine this type of role behavior, because labor negotiation is, at its core, a process of boundary spanning. Representatives from two groups meet in order to convey information and reach agreement on a contract that will define the terms of their relationship for several years. This is a situation in which role conflict is likely: negotiators are exposed to role expectations (Kahn et al., 1964) of both constituents and opponents that are often inconsistent. The standard way to resolve the conflict, as depicted in the literature (Walton and McKersie, 1965), is either to ignore the role expectations of one side or the other or to create rituals that allow negotiators to convince each side that negotiators are playing the roles that are required of them. In both cases, the communication flows that the boundary spanner conducts between sides are impeded. We show that there exists an alternative solution to role conflict in labor negotiations: the disaggregation of the boundary spanning function into its substructures (i.e., role differentiation).

Boundary Spanners

Adams (1976) called boundary spanners "boundary role persons" (or BRPs). A BRP is an individual who is responsible for contacting people outside his or her own group. The BRP serves two functions: he or she conveys influence between constituents and their opponents, and he or she represents the perceptions, expectations, and ideas of each side to the other. Though rigorous definitions are lacking in the literature, we believe the boundary role person can be formally defined. Given two disjoint groups L and M, an individual j is a boundary spanner between the two groups if and only if the following conditions hold:

$$iRj, jRi, kRj, jRk, i\bar{R}k, k\bar{R}i,$$

where $i \Sigma L$, $k \Sigma M$, and R is the relationship along which the boundary spanning role is delineated, and $\bar{R}$ denotes no relationship between the actors. Implicit in R is a bundle of "flows," such as advice, information, and trust. Note that j can either be a member of L or M, but j cannot be a member of both, since this joint membership would violate the condition that L and M are disjoint groups. Typically, the boundary role person is depicted as not just an intermediary between two persons but between many individuals from both sides.

The BRP, as the dominant conduit of influence and representation, is caught between the two sides. In terms of role theory (Kahn et al., 1964), both constituents and opponents have expectations about the role that the BRP is to fulfill. Each signals the BRP that certain behaviors and

attitudes are expected of him or her and sanctions behaviors that deviate from what is expected. Constituents, for example, expect the BRP to represent them to the opponent BRP and maintain clear loyalties to them, while the opponent BRP expects the BRP to listen and respond to her, help her deal with constituents, and develop a relationship of trust and understanding. These expectations are clearly inconsistent, leading to role conflict. The problem, it should be emphasized, is not simply that each side is trying to influence the other side or has different expectations for BRPs but the fact that conflicting expectations and conflicting flows of influence are being placed on the same person.

One of the reasons why a large amount of attention has been paid to role conflict among boundary spanners is that when those who convey role expectations are located in separate social systems, role conflict is especially severe. Van Sell, Brief, and Schuler (1981: 56) reported that "the best documented organizational correlates of role conflict are boundary spanning requirements": role conflict has been identified for several boundary spanning positions, including middle managers (Kahn et al., 1964), housewives with part-time employment outside of the home (Hall and Gordon, 1973), purchasing agents (Spekman, 1979), and waitresses (Whyte, 1949).

Role conflict has negative consequences for effective boundary spanning. One well-documented example is Adams's (1976) "distrust cycle." As he explained, because the BRP is exposed to the other side and has to represent the other side's views to constituents, he or she tends to be distrusted. Distrust causes constituents to monitor the BRP's behavior. Monitoring of behavior, in turn, causes the BRP to act less cooperatively with the opponent BRP, leading to greater resistance by the opponent BRP, more difficulty reaching agreement, and more monitoring. BRP interaction and the resolution of intergroup conflict are thereby inhibited. Role conflict has been thought to reduce organizational performance in other ways as well: It has been correlated with unsatisfactory work group relationships, slower and less accurate performance, and less confidence in the organization (Kahn et al., 1964: 49).

The BRP in Labor Negotiations

The pattern of relations and tensions described above for BRPs, and the dysfunctional patterns of behavior that can be produced, applies to labor negotiators as well (Walton and McKersie, 1965). Constituents, in their effort to protect their interests and prevent collusion among negotiators, expect their lead bargainers to act as tough as possible during negotiations, remain interpersonally distant from opposing bargainers, and present to opponents exactly what they are told. Opposing lead bargainers define their relations differently. They see their opponent as someone they have to deal with again, at the next round of negotiations and between negotiations. They prefer to build familiarity, trust, and comfort with opponents because that allows them to ask for favors and make better predictions about their behaviors. As Walton and McKersie (1965: 284) put it:

A negotiator can be seen as occupying several roles simultaneously. The primary role of the negotiator is that which is sent from within his own organization. Another role exists because of the relationship that links him with his opponent. Thus, the boundary role occupied by the chief negotiator is the target of two sets of prescriptions about what the negotiator ought to do and how he should behave.

Thus, in line with the general analysis of BRPs, Walton and McKersie focus on the role of the individual (the lead negotiator) as boundary spanner, identify conflicting requirements placed on that person due to his or her structural position, and suggest that role conflict will result.

Among the possible dysfunctional consequences of this role conflict is the triggering of the previously mentioned distrust cycle. Bargainers may respond to this escalating distrust by focusing only on their relationship with constituents (Bartunek, Benton, and Keys, 1975) and taking an overly aggressive stance toward the opponent. This inhibits the exchange of information and reduces the chance that the parties will generate a mutually satisfactory agreement (Pruitt and Gleason, 1978). Negotiators may also respond to role conflict by distancing themselves from constituents, which also reduces the quality of the outcome (Perry and Angle, 1979). In either case, the iterated flow of information back and forth between labor and management—the very function of labor negotiations—may be severely curtailed.

Managing Role Conflict

Responses to role conflict that have been proposed include withdrawing from interaction with role senders, rigidly defending the status quo, and renegotiating the demands of role senders (Van Sell, Brief, and Schuler, 1981). The first two options can hinder organizational effectiveness, while the last may be too difficult for most people to accomplish. Walton and McKersie (1965) offered a similar set of strategies for managing role conflict in labor negotiations: modify constituent pressures, ignore them, or conform to them. But not all possibilities are available in all instances. Conformity to substantive expectations is not a possibility: that would prevent substantive compromise and negotiations with the other side. Modifying or ignoring behavioral expectations is not often feasible: behavioral expectations are too strong. One approach that may work is to engage in behaviors that conform to constituents' expectations that negotiators act antagonistically toward the opponent, while substantively engaging in compromise (Friedman, 1992). Thus, negotiators are playing two games at once, each of which meets some role expectations of constituents and some of opponents. In this way, the distrust cycle discussed by Adams (1976) is broken, but such a solution depends on the ability of the negotiators to maintain this delicately balanced performance, and it may leave even the most skilled negotiators too little room to maneuver if more radical changes need to be negotiated. While these approaches are reasonable responses to role conflict, they all diminish the ability of the boundary spanner to create a bridge between the two sides, and the contradictions that accompany role conflict are still imposed on the individual BRP.

Disaggregating the BRP

Implicit in both the problem and proposed remedies of role conflict is the assumption that the boundary spanning function is a unitary, indivisible entity. This assumption is natural if boundary spanning is seen as a role held by single individuals, which in some jobs, such as waitressing (Whyte, 1949), may be the case. Yet we know that there are multiple boundary spanners in R&D groups (Tushman, 1977), that influence and information flows across groups do not always go through the same person (Weimann, 1983), and although the lead negotiators are often seen as the main point of contact between labor and management during negotiations, there are usually ten to twenty people attending main-table negotiations. Therefore, it is unnecessary in such cases to assume that boundary spanning is a unitary entity. Moreover, such an assumption may be misleading, since it obscures a solution that does not necessarily involve impeding flows of influence across groups: functional differentiation.

Taking the formal definition of the BRP as a point of departure, we propose that the boundary spanning role can be functionally differentiated in terms of both the content and the structure of the role. First, the content of the relationship (R) that links the actors can be decomposed into constituent elements or flows. Second, underlying the bi-directionality of the ties between the boundary spanner and the members from the two groups are two asymmetric structures of mediation—a gatekeeper, who is a conduit for inflows to the group of which the boundary spanner is a member, and a representative, who is a transmitter of outflows from the group of which the boundary spanner is a member. We shall consider each of these forms of differentiation separately.

Content Differentiation

While one individual may be a mediator of multiple types of flows, there is no reason to think that such convergence is necessary. In fact, work within the task-group literature suggests just the opposite. One classic finding from the task-group literature is the differentiation of task and socioemotional roles. Bales and Slater (1955) found, to their surprise, that the person who was rated as having the "best ideas" of the group was not the same person who was rated as "most liked." This observation led them to argue that each person was leading activities oriented to different "system" needs. The "idea" person, by focusing on task activities, helped the group adapt to its external environment (i.e., solve "adaptive-instrumental" problems); the "most-liked" person, by focusing on socioemotional activities, helped the group to become internally integrated (i.e., solve "integrative-expressive" problems). One person did not lead both types of tasks, argued Slater (1955), because they required opposite types of personalities.

Bales and Slater's original analysis of role separation has been challenged both conceptually and methodologically (Lewis, 1972; Bonacich and Lewis, 1973; Riedesel, 1974), but their central finding—the contradiction between task and socioemotional leadership—is generally accepted if stated

structurally. Burke (1967), for example, argued that the position of task leader requires a person to drive the group to complete the task, which diminishes the likelihood that group members will then like that person. And, more recently, Ridgeway and Johnson (1990) reformulated the contradiction in terms of theories of expectations and attribution.

The tension highlighted in the argument for differentiating socioemotional and task roles is the same tension that Walton and McKersie (1965) described for labor negotiations. On the one hand, they argued, affective ties between negotiators need to be strengthened because a certain amount of common trust is necessary. On the other hand, constituents drive negotiators to focus on the task of getting more for their side and try to prevent them from getting too close to the opposing negotiators. The role expectations conveyed to negotiators by opponents and constituents conflict with each other exactly along the lines of social closeness versus strict task orientation. Because task and socioemotional leadership roles are incompatible, we expect that task and socioemotional brokering between the two sides will be differentiated:

Hypothesis 1: To the extent that an individual mediates socioemotional (or task) flows, he or she will be less likely to mediate task (or socioemotional) flows.

In addition to predicting that the two roles are inherently incompatible, we expect that the strength of that incompatibility will increase over time for labor negotiators. Constituents convey role expectations to boundary spanners to achieve particular goals. At the beginning of negotiations, negotiators, opponents, and constituents are aware of goals, but there is also time to wait and see what develops. Role expectations can be somewhat relaxed. But as the contract deadline draws nearer, more of the tough decisions will have to be made: Issues will be dropped, concessions made, and finances discussed. Tension increases, and all parties become more active: They care more about the roles that negotiators are playing and enforce them more actively. This increase in tension is well documented for negotiations in general (Rubin and Brown, 1975) and labor negotiations in particular (Serrin, 1973), as well as for any task group that works under the constraint of a deadline (Gersick, 1988). Because we expect role conflict to increase over the course of negotiations, and differentiation is an adaptive or preemptive response to role conflict, we expect role differentiation to increase over time for negotiators:

Hypothesis 2: In bargaining groups, differentiation between socioemotional and task-oriented flows will increase as the contract deadline draws near.

Structural Differentiation: Underlying Asymmetric Structures

While the task-group literature has devoted considerable attention to the content of flows between groups, it has paid less attention to specifying the exact forms or structures underlying intergroup relations. In contrast, work broadly within the network analysis tradition attaches considerable significance to how the structure of relations is both a

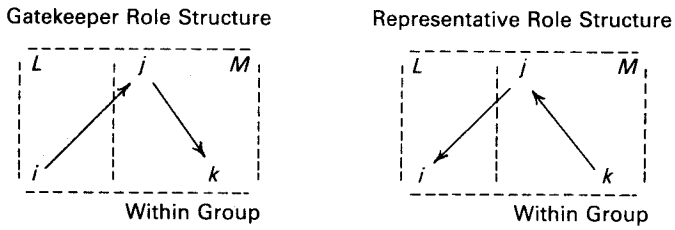
manifestation of and constraint upon contending groups (Laumann and Marsden, 1979; Laumann and Knoke, 1987).

Recently, Gould and Fernandez (1989) have reconsidered the brokerage role as a mediating structure between groups. An individual j is a broker between individuals i and k if and only if

$$iF\bar{j},jFk,iFk,$$

where F denotes some flow or tie from the first to second actor, and $\bar{F}$ denotes no flow from the first to second actor. Depending on different configurations of group membership among actors $i,j,$ and $k,$ one of five types of brokerage relations may result. However, only two, the gatekeeper and representative, need concern us here. In the situation in which there are two groups, L and $M,$ actor i belongs to $L,$ and actors j and k belong to $M.$ Actor j is a gatekeeper if i sends a tie to j but not $k,$ and j sends a tie to $k.$ Alternatively, j is a representative if k sends a tie to j but not to $i,$ and j sends a tie to $i.$ In other words, a gatekeeper brokers flows into the group of which she is a member. A representative brokers flows out of her own group. The differences between the representative and gatekeeper role can be graphically represented, as in Figure 1.

Figure 1. Differences in structure between gatekeeper and representative role.



Formally, an actor j is a gatekeeper between actors i and k if and only if

$$iFj,jFk,i\bar{F}k, \quad i \Sigma L;j,k \Sigma M.$$

Alternatively, j is a representative if and only if

$$kFj,jFi,k\bar{F}i, \quad i \Sigma L;j,k \Sigma M.$$

The representative and gatekeeping roles are thus at least definitionally independent. The fact that an individual occupies one role does not necessarily imply that she does or does not occupy the other role.

Comparing these definitions of the gatekeeper and representative to that of the boundary spanner specified above, we can now redefine the boundary spanning role in terms of these two types of brokerage roles: A boundary spanner is an individual who is either a gatekeeper or a representative along some flows. Moreover, it becomes possible to reconceptualize the problem of role conflict in terms of a basic incompatibility between these two types of brokerage roles. As arguments like Adams's cycle of distrust imply, the problem of role conflict emerges largely because occupancy of a gatekeeper role tends to undercut the extent to which members of the gatekeeper's own group will

perceive him or her as a representative of their interests. Conversely, a faithful enactment of the representative role in a confrontational setting impedes the representative's willingness to be influenced by the other side. Given that a cause of role conflict is the joint occupancy of these roles, we posit that one possible consequence or solution to the problem is differentiation into separate gatekeeper and representative positions.

Hypothesis 3: To the extent that an individual plays a gatekeeper (or representative) role, she is less likely to play a representative (or gatekeeper) role.

Hypothesis 4: In bargaining groups, differentiation between representative and gatekeeper roles will increase as the contract deadline draws near.

We thus propose that a boundary spanning position can be reconceptualized as a collective unit, with significant functional differentiation inside the collectivity. The very existence of role conflict depends on the assumption, conceptually and empirically, that an individual must experience and cope with role conflict. In contrast, we contend that the simple existence of conflicting role signals does not necessarily mean that the same individual need be the object of these signals. It is possible for individuals to specialize in terms of enacting different dimensions of constituent and opponent role expectations. Moreover, as intergroup conflict heightens, we expect that pressure toward differentiation will increase.

METHOD

Research Setting

We assessed the validity of the four hypotheses using longitudinal network data collected over the three-month span that "Midwestern University" negotiated with its faculty union, "American Faculty Union." The management-union contract at Midwestern University is renegotiated every three years. The observed round of negotiations was preceded by training in "mutual-gains" bargaining, which included lectures and experiential exercises.[1] As part of the research team, the first author attended training, observed negotiations, attended caucuses and meetings with constituents, and observed participants.

The faculty at Midwestern had been unionized in the 1970s and had gone through several rounds of negotiations and one strike in the ensuing years. The union's bargaining team consisted of the contract administrator (a full-time, on-campus position), the union's vice president (the lead bargainer), and representatives from the university's different schools. Only the contract administrator had been directly involved in negotiations before. The team's constituents were the union's board of directors (the nine elected leaders of the union), the bargaining council (made up of 26 active members of the union who wanted to help shape the direction of negotiation), and the members of the union. What is distinctive about this structure, compared with most unions, is that the bargainers were all local. In many negotiations, the lead bargainer for the union is the servicing representative, a full-time union employee from the central

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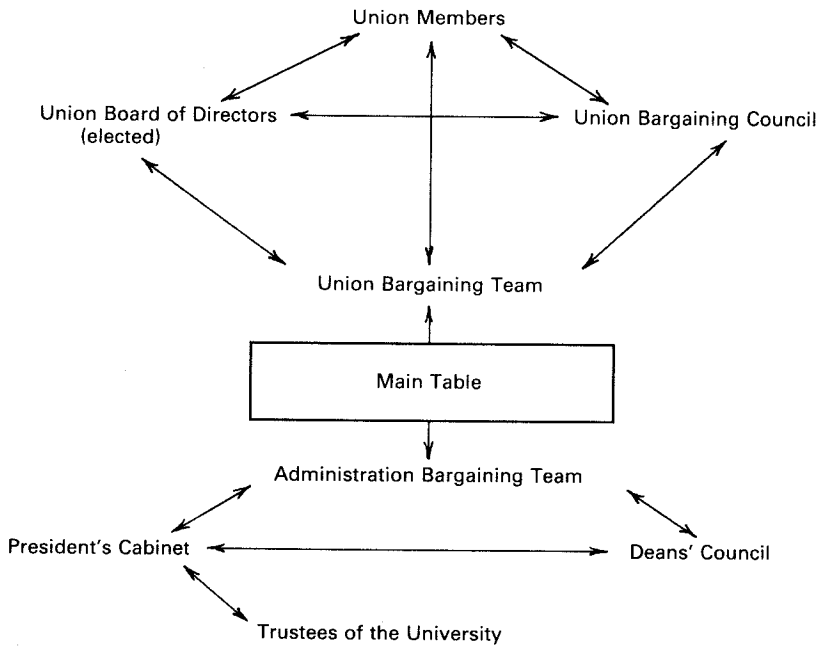
The history of this approach to bargaining and the results of its application to bargaining at Midwestern University are described in Friedman (1990).

office. Here, the servicing representative served only this university, was physically located on campus, and was not the lead bargainer.

The administration's bargaining team consisted of a contract administrator, deans, and associate deans. Only the contract administrator and the lead negotiator (one of the deans) had been in negotiations before. The team's constituents were the Deans' Council, the President's Cabinet, and the president. What was distinctive about this group of negotiators was that they were almost entirely made up of "line" managers (i.e., those with direct operational responsibilities and decision-making power) rather than "staff" (i.e., those who provide technical advice, service, or support to line managers). Figure 2 displays the formally defined relations between the negotiators and their constituents.

Figure 2. Pattern of formal relations between negotiators and constituents.



The negotiations can be broken down into several identifiable periods. The first period consisted of training in mutual-gains bargaining. During this time, there were seven negotiators from each side. However, after the initial training session, one member was added to both union and management. Three weeks after the training, negotiations began.

The first six weeks of negotiations were filled with many hours of productive discussion and the teams developed a sense of camaraderie, but there were also many outbursts of conflict and anger. For example, discussions about the possible decertification of one segment of the union led to angry exchanges; initial salary proposals by each side generated expressions of shock and disappointment by the other; and in a meeting attended not only by the negotiators

but their constituents as well, a top administrator and faculty member engaged in verbal attacks on one another. As the sixth week neared its end, time appeared to be running short. Feeling considerable pressure, and aided by a session with the mutual-gains trainer, the teams moved to a subcommittee structure.

During weeks seven through nine, subcommittees met and successfully resolved several noneconomic issues. Each team met more frequently with its constituents. Over the next three weeks, financial issues were negotiated, packages were formed and traded, and notable constituents, such as the president of the university and the president of the local union, directed the actions of their bargainers more actively and, in the final days, met face to face in sidebar discussions away from the main table. This was a period of great tension. Until the final agreement was reached in the twelfth week, there was a general fear that the negotiations might collapse.

Network Indices

Negotiators answered questions about their personal networks at four points in time during the negotiations: during prebargaining training, six weeks into negotiations, nine weeks into negotiations, and after the end of negotiations. The advantage of network data is that it allows for a more precise definition of roles than is found in typical labor negotiations studies; the advantage of longitudinal data is that they allowed us to examine the process of role differentiation across time. In the first panel of the survey, respondents were asked whether, based on personal contact and reputation, they trusted each other negotiator. A 4-point scale was used, with the following descriptors: "cautious," "neutral," "trust him/her," and "trust him/her strongly," but for the purpose of our analysis the data were recoded with the latter two categories represented by a 1 and all others by 0. This question was asked in all subsequent rounds.

By the time of the second panel, respondents had engaged in some substantial interaction; therefore, other questions about personal networks were included. One asked the respondent to identify the negotiators from whom he or she sought advice in the event of a problem. Respondents were free to nominate as many or as few of the other negotiators as they wished.

From these data, separate sociomatrices for trust and advice were constructed for each time period on which there were data. Senders of ties were placed in rows, and receivers were placed in columns. A 1 in cell *i, j* implied that *i* cited *j*. Asymmetry was preserved in this sociometric data. In identifying brokerage roles, flows of advice were the reverse of advice citations. In other words, if *i* cited *j* as someone to whom *i* went for advice, this means that advice flowed from *j* to *i*. Trust, however, was assumed to flow in the direction of citations. In other words, if *i* trusts *j*, and *j* trusts *k*, then *j* is a conduit of socioemotional influence from *i* to *k*, not from *k* to *i*.

These sociometric data on flows of trust and advice constitute the primary focus of our investigation. Each flow

corresponded to one of the two dimensions of interpersonal orientation. Trust provides insight into the socioemotional dimension of group interaction; advice allows for inferences about task orientation.

Using this data, raw brokerage scores were calculated, following Gould and Fernandez (1989). Actor j's raw gatekeeper score during period or panel p can be calculated as follows:

$$g_{jp} = \sum_{i=1}^{n_L} \sum_{k=1}^{n_M} f_{ij} f_{jk} (1 - f_{ik}) \qquad j \neq k;\ i \in L;\ j, k \in M,$$

where n_L is the number of actors in group L, n_M is the number in group M, and f_{ij}, f_{jk}, f_{ik} are 1 if there is a flow f from the first subscripted actor to the second during panel p, and 0 otherwise. Similarly, actor j's representative score during period p is:

$$r_{jp} = \sum_{i=1}^{n_L} \sum_{k=1}^{n_M} f_{kj} f_{ji} (1 - f_{ki}) \qquad j \neq k;\ i \in L;\ j, k \in M.$$

Again f denotes the flow from the first subscripted actor to the second and is coded 1 if there is a tie, and 0 otherwise.

We let g_{ajp} and g_{tjp} denote the gatekeeper scores on advice and trust, respectively. Similarly, r_{ajp} and r_{tjp} denote actor j's representative scores on advice and trust. Gatekeeper and representative scores on advice and trust were calculated for each actor for each time period. These gatekeeper and representative scores were then added together to give a total boundary spanning score for trust and for advice. Formally,

$$t_{ajp} = r_{ajp} + g_{ajp}$$

and

$$t_{tjp} = r_{tjp} + g_{tjp},$$

where t_{ajp} is the total advice score for actor j in period p, and t_{tjp} is the total trust score for actor j in period p. Therefore, each actor has six scores for each time period in which he or she responded to a survey—representative, gatekeeper, and total scores on trust and representative, gatekeeper, and total scores on advice. As noted earlier, there were 14 negotiators at the time of the first survey and 16 thereafter, but during the third time period, two union negotiators were absent during the time of the survey. Accordingly, the sociomatrices include only 14 negotiators for this period as well.

RESULTS

Table 1 presents basic descriptive statistics for the brokerage roles. The observations are for each person in each period. Therefore, for the trust data, the number of observations is 60 (14 persons in time periods 1 and 3, and 16 in periods 2 and 4); for the advice data, the number of observations is 46 (16 persons in periods 2 and 4, 14 in period 3). The fact that the brokerage scores are higher for

Table 1

Brokerage Scores

Variable	Mean	S.D.	Min.	Max.	*N*
		Trust			
Gkpr. (g_{jp})	4.43	5.80	0	30	60
Rep. (r_{jp})	5.00	6.47	0	21	60
Total (t_{jp})	9.43	11.26	0	46	60
		Advice			
Gkpr. (g_{jp})	1.76	5.23	0	31	46
Rep. (r_{jp})	0.57	1.34	0	5	46
Total (t_{jp})	2.32	5.50	0	31	46

trust is partially a result of the fact that trust citations were more common than advice citations.

In addition to these simple descriptives, brokerage scores were correlated with within-group centrality, that is, centrality within the negotiating team of which the individual was a member. Laumann et al. (1992) found that, while the central figures in most policy domains were also the ones who spanned boundaries, this finding did not hold true for labor leaders. Heightened respect within the labor community was correlated with distance from opponents. Ideological purity was most important, not external contacts. To calculate within-group centrality, we used Bonacich's (1987) measure of centrality.[2] Table 2 presents the correlation between centrality and the various brokerage measures in each time period. The results are rather consistent. There is a moderately high correlation between centrality and boundary spanning. Those who are most influential within the bargaining teams are also the most likely to occupy boundary spanning roles of one type or another. On the surface, these results are contrary to the finding of Laumann et al. (1992), however, it should be remembered that data were obtained only on the members of the negotiating teams, not the constituents. It is, for example, possible that negotiators as a group tend not to be centrally located in the overall structures of either the management or union sides.

To assess the degree to which the data are consistent with hypotheses 1 and 2, we calculated the partial correlation between the total boundary scores for trust and advice for each time period. Following Holland and Leinhardt (1978) we controled for the sum "indegree" and "outdegree" of each actor across the sociomatrices for trust and advice. Indegree is the number of times that an actor is the object of a flow from another actor; outdegree is the number of times that the actor chooses another actor as a target of a flow. For example, if a total of two actors cite an individual as someone to whom they go for advice, that individual has an indegree of two; if that same actor cites a total of three persons to whom she goes for advice, that individual has an outdegree of three.

The basic rationale for this control is that, while we expected both types of brokerage scores to be negatively correlated

2
The beta value in the centrality measure was one-half the reciprocal of the maximum eigenvalue.

Table 2

Correlation of Centrality with Brokerage Scores

Period	Rep.	Gkpr.	Total (Rep. + Gkpr.)
		Trust	
1	.36	.44	.42
2	.70	.70	.73
3	.51	.27	.34
4	.37	.53	.49
		Advice	
2	.56	.45	.62
3	.48	.36	.53
4	.53	.43	.62

with one another, we anticipated (and the centrality scores suggest) that both scores would be positively correlated with the degree to which an actor was embedded in the network. The relationship between brokerage scores and embeddedness can be seen in Table 3, which displays the zero-order correlations of the various brokerage scores with the appropriate measures for indegree and outdegree. The greater an actor's indegree and/or outdegree, the more likely that actor is to occupy each of the roles. In order to assess the degree of and tendency toward differentiation of boundary spanning activity properly, it is necessary to control for this embeddedness effect; therefore, we partialed out indegree and outdegree to measure brokerage or boundary spanning dynamics.

Table 4 presents the findings. Correlations are available only for periods 2, 3, and 4, because no advice data were collected, for reasons explained above, in period 1. The average partial correlation across the three time periods is negative and thus consistent with hypothesis 1, and the fact that the correlations become increasingly negative over time is consistent with hypothesis 2. Since the observed network

Table 3

Bivariate Correlations*

	Gatekeeper	Trust	Indegree	Outdegree
		Advice and trust totals		
Advice		.09 (.51)	.37 (.01)	.47 (.00)
Trust			.27 (.07)	.70 (.00)
Indegree				.11 (.44)
		Trust		
Representative	.71 (.00)		.26 (.03)	.61 (.00)
Gatekeeper			.24 (.06)	.57 (.00)
Indegree				.06 (.02)
		Advice		
Representative	.08 (.58)		.57 (.01)	.23 (.12)
Gatekeeper			.38 (.01)	.76 (.00)
Indegree				.26 (.07)

* *P*-values are in parentheses.

Table 4

Partial Correlation of Trust and Advice*

Period	Correlation	Fisher's Z	N	Difference scores		
2	−.40	−.42	16	Period	3	4
3	−.51	−.56	14	2	.14 (.42)	.41 (.40)
4	−.68	−.83	16	3		.27 (.44)
Average score	−.54	−.61 (.81)•••	46	Pooled Z score = 1.15		

••• $p < .01$.
* Standard errors are in parentheses.

is not an independent, random sample of individuals from some underlying population but a meaningful case in itself, we know that we can rule out the null hypotheses for the case analyzed.

In order to explore a stronger claim, that the observed results are not due simply to stochastic fluctuation, we tested for the statistical significance of these observed results, though the inferences drawn from such hypothesis tests are clearly different than those drawn from the application of similar techniques to a random sample of a population.[3] Even though the population consists of only sixteen individuals, it is nonetheless possible to rule out the null hypothesis in four out of six instances. To test both hypotheses with reference to the correlation data, we first converted the partial correlations into Fisher's z scores (Fisher, 1973). The transformed values are listed in the second column of Table 4.

To test hypothesis 1, we constructed a weighted average of the z values, where the weight is inversely proportional to the variance. The error distribution of the weighted sum follows the normal distribution. If the sum significantly departs from 0, then it is possible to reject the null hypothesis that the average observed correlation is due to random stochastic processes. The weighted sum for the transformed correlations is listed beneath the transformed scores in the second column of Table 4. The average z value is −.61 with a standard error of .18, allowing us to reject the null hypothesis at the .01 level of significance.

Hypothesis 2 essentially specifies that $z_{ati} > z_{atj}$, where z_{ati} and z_{atj} are the transformed partial correlations between advice and trust at time periods i and j, respectively, and j is greater than i. For the three time periods, there are three possible such comparisons, period 3 vs. period 2, period 4 vs. period 2, and period 4 vs. period 3. We applied a difference test to the scores. Because correlations drawn from the same group of individuals at two time points are not independent, we applied the statistic advocated by Dunn and Clark (1969) to the analysis of differences across nonindependent samples:

$$d \Big/ \sqrt{\frac{2(1 - c)}{n - k - 3}},$$

where n is the number of individuals being compared, k is the number of variables being controlled, d is the difference between the two Fisher's z scores, and c is the asymptotic

3

Though it is incorrect to consider individuals in a network as constituting a random sample, it is possible to condition on the important variables (e.g., the individuals involved, the length of time of the negotiation, and the rules of the negotiation) and to think of the social phenomenon under study as one possible outcome of what is fundamentally a stochastic process. If the observed outcome is interpreted in this manner, then the "population" to which inferences are made is the collection of possible outcomes conditioned upon the relevant variables, and a statistically significant result provides tangible grounds for rejecting the hypothesis that the observed outcome is a stochastic manifestation of a valid null. We wish to thank Tony Tam for insights on this point.

correlation of the two scores (see Dunn and Clark, 1969 for the formula for *c*). In order to test hypothesis 2 across all three rounds, the results were pooled by first adding the three difference statistics and then dividing the sum by the square root of the number of rounds (Wolf, 1986). Columns 3 and 4 in Table 4 provide the results; the differences are followed by the standard errors in parentheses. In none of the three comparisons are the results at commonly accepted levels of statistical significance. Thus, on the basis of the observed outcome, we cannot reject the hypothesis that the theoretical distribution of possible outcomes for this particular group is the stochastic manifestation of a true null relationship. Nevertheless, though it is not possible to generalize beyond what was actually observed to the hypothetical "population" of possibilities, this fact does not mitigate against the earlier conclusion that the observed outcome is clearly consistent with the hypothesis of patterned, negative change.

Table 5 presents the partial correlations between gatekeeper and representative roles, once again controlling for indegree and outdegree. The gatekeeper and representative roles become steadily differentiated in the trust network as the negotiations proceed. In the final period, there is a mild negative correlation between occupancies of the two roles. The pattern for advice is similar in that over periods 2, 3, and 4, the representative and gatekeeper roles become more highly differentiated. These results are consistent with hypothesis 4, although the effect is much greater within flows of advice than within flows of trust. The first period in which information on advice flows was obtained reveals a mild negative correlation between the two roles; over the next two periods, the negative correlation increases in strength.

Table 5

Partial Correlation of Gatekeeper and Representative Roles*

Period	Correlation	Fisher's *Z*	*N*	Difference scores			
				Advice			
2	−.04	−.04	16	Period	3	4	
3	−.37	−.39	14	2	.34 (.46)	.68 (.37)•	
4	−.62	−.73	16	3		.34 (.36)	
Average score	−.34	−.35 (.16)••	46	Pooled *Z* score = 2.03•••			
				Trust			
1	.96	1.94	14	Period	2	3	4
2	.18	.18	16	1	1.77 (.40)•••	1.64 (.44)•••	2.05 (.43)•••
3	.28	.28	14	2		−.10 (.43)	.14 (.45)
4	−.05	−.05	16	3			.33 (.43)
Average score	.53	.59 (.12)•••		Pooled *Z* score = 5.60•••			

• $p < .10$; •• $p < .05$; ••• $p < .01$.
* Standard errors are in parentheses.

The results, however, are mixed with respect to hypothesis 3. Gatekeepers and representatives of advice are strongly differentiated across all three time periods, while with respect to trust, representative and gatekeeper roles are not strongly differentiated in the earlier time periods.

In the final round, there is essentially no correlation between the gatekeeper and representative roles, consistent with the hypothesis of differentiation, since the occupancy of one role does not entail the occupancy of the other. Even though the level of conflict implicit in the different boundary spanning roles for trust may not be initially as great, the increasing conflict of the negotiations over time does seem to have an effect on the degree to which an individual is able to maintain successfully both gatekeeper and representative roles on trust flows.

To determine the robustness of these results, we applied the same tests for hypotheses 3 and 4 that were applied to hypotheses 1 and 2. Column 3 of Table 5 shows the results for advice. The average z value of $-.35$ (corresponding to a correlation coefficient of $-.34$) is statistically significant at the .05 level. The difference scores across time periods are listed in columns three and four. The difference between time period 2 and 4 is statistically significant at the .10 level, and the pooled z score is statistically significant at the .05 level. Thus, for the advice data, it is possible to reject the null hypothesis suggested by both hypotheses 3 and 4. The results for trust in Table 5 show that the null for hypothesis 4 can be rejected at the .01 level for the pooled results.

Negotiating Results

The negotiations were filled with moments of great tension and anger, periods of reconciliation and cooperation, and pressures from constituents on both sides. In the end, however, an agreement was reached by the deadline that included innovations in health care insurance structure, the definition of tenure among medical school faculty, and shared governance. No personal animosities built up between negotiators, and the relationship between the faculty and the administration was unharmed by negotiations. The ongoing grievance mediation process was not derailed, and the union's lead bargainer was elected president of the union on a platform of mutual-gains bargaining.

There are no clear criteria to define success in negotiations, but, by all accounts of the negotiators involved, this round of negotiations was more innovative and less destructive than any of the previous rounds of negotiations at Midwestern University. Moreover, our impression of the case, in comparison with others that we have observed, is that there was much broader participation in these negotiations by members of both negotiating teams than is typical, and the negotiators did have an unusually strong sense of group identity. Participants themselves made similar claims, comparing these negotiations to the previous round, three years earlier. Although it is impossible to say that the relative success of these negotiations was due to role differentiation, it is at least worth noting the simultaneous presence of positive organizational outcomes and role differentiation.

DISCUSSION

The results of this study reveal that role differentiation generally increases over time. Only in the trust network in

the earlier time periods were the roles of gatekeeper and representative not strongly differentiated. This lack of initial differentiation may be due to the fact that trust relations tend to be reciprocal, whereas advice relations tend to be asymmetrical. Such a principle of reciprocity would be likely to engender greater overlap of the roles. Another possibility is that there is simply less conflict implicit in the flow of trust to and from both sides than in the flow of advice, since the former is less public and less likely to yield directly contradictory signals. The results of the tests of the null hypotheses also suggest that the findings of this study are robust. Only in the case of hypothesis 2 were we unable to reject the possibility that the observed outcome could be a stochastic manifestation of a valid null hypothesis. With other hypotheses we were able to rule out the null hypothesis with what is in effect a population size of just 16 negotiators. Of course, because of the limited possibilities for statistical inference, any findings based on one case ought to be viewed with caution. Clearly, more empirical work is needed to test for the broader generalizability of these four hypotheses. At the same time, however, the results do point to a possible solution to the problem of role conflict that has been obscured by previous views of boundary spanners.

Structural Management of Role Conflict

The existing literature on labor negotiation (Walton and McKersie, 1965) identifies several strategies for managing role conflict, including withdrawal from interactions with one side or the use of rituals and drama to conform superficially to the expectations of one side or the other. These strategies have worked well in many cases, but they also have potential negative effects: Information flows are restricted and useful solutions to difficult problems may be missed. We have shown that there exists an alternative solution to role conflict in labor negotiations: the disaggregation of the boundary spanning function into its substructures through role differentiation. And there are indications that, at Midwestern University, this pattern of role differentiation occurred during the most successful negotiations in recent memory.

It remains to be determined under what conditions this solution to the boundary spanning problem is possible. While a rigorous test of broader applicability would require considerable comparative analysis, we can suggest at least two factors that would effect boundary spanning role differentiation. First, and most obviously, differentiation depends on the presence of a group on the boundary. As discussed above, there are some situations in which only an individual is available to broker outside relations. Thus, for example, while a retail store has many people that deal with customers (a clerk will help the customer, but complaints are handled by a customer service specialist), a wholesale furniture salesperson visiting stores is the lone contact between the company and the customer. Similarly, small negotiations may not have enough people involved to be able to differentiate roles.

Second, role differentiation is not possible if cross-group contacts by more than one person are prohibited. In some

labor negotiations, this is the case. At Midwestern, several conditions made it more likely that contacts were not so highly controlled: They engaged in joint training prior to the start of negotiations, neither lead bargainer was a negotiating professional, and other team members had academic backgrounds equal to that of the lead bargainers. In other cases that we know of (Friedman and Gal, 1991), rigid maintenance of formal role structures has hurt negotiations, while a looser structure that allowed for informal role differentiation helped negotiations.

It is also noteworthy that role differentiation was not produced as a conscious policy at Midwestern University but, rather, emerged informally. It is not clear, therefore, what the effect would be of attempts to impose role differentiation formally by, for example, assigning one person on the team to be the gatekeeper and another to be the representative. The real underlying pattern of boundary spanning may or may not follow the formally intended pattern.

CONCLUSION

Much of the research on the management of boundary roles has focused on the individual as boundary spanner. Based on our network analysis of the concrete structure of boundary spanning roles in negotiations, we found that boundary spanning is a differentiated function that is not necessarily loaded onto one person: some individuals among the group of people on the bargaining team broker ties toward their opponents (representatives) while others broker ties from their opponents (gatekeepers), and some broker socioemotional ties, while others broker task-oriented ties. This case study does not show that such a pattern is generally present in boundary spanning situations, but it does establish the existence (in at least some cases) of this particular solution to role-conflict pressures common to boundary spanning brokers.

The results also show that we can advance our understanding of boundary spanning structure by thinking of boundary spanners not as nominal positions that are given but, rather, as potential concrete social relations that must be identified empirically. Network analysis helped us tease apart two types of broker roles, revealing a process of broker role differentiation over the course of negotiations.

While these results have a direct bearing on labor negotiations, they have a broader relevance. Boundary spanning is an element of organizational life that is pervasive: Different units both inside and outside of formally identifiable organizations interact to create a web of ties that are both administered and market-driven. Therefore, negotiations are also a prominent element of organizational life (Bazerman and Lewicki, 1983; Eccles, 1983; Lax and Sebenius, 1986) and one that becomes more important as network or quasi-firm structures (Eccles, 1981; Powell, 1990) increase in importance.

For negotiations, interfunctional relations, joint ventures, or other cross-group ties in organizations, the boundary spanner

provides the vehicle for communications and dispute resolution. Role conflict can threaten to interrupt those activities. But, we have shown, role conflict can be avoided if several people are in a position to take on different aspects of the boundary spanning function. Both conceptually and methodologically, it is possible to ask about the structural rather than psychological causes of role conflict and thus to imagine some organizational rather than interpersonal means of containing it. We encourage scholars to examine not just the effects of role conflict, but the structure of the situation that produces it.

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