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The Social Utility of Informal Institutions: Caucuses as Networks in the 110th United States House of Representatives

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Abstract

This paper challenges the existing state-of-knowledge about legislative caucuses by arguing that the caucus system reflects and reinforces formal organizing institutions, such as parties and committees, rather than counterbalancing them. We argue that legislators engage in the caucus system in order to maximize the social utility of their relationships. Using a social network framework, we develop and test hypotheses that seek to ascertain the types of legislators that benefit most from the caucus network. We collect data on the complete population of caucuses and their members from the first session of the 110th U.S. House of Representatives and conduct social network and regression analyses to find evidence that the caucus system both supports the hierarchical structure of the formal leadership institutions and offers a meaningful way for all members to establish and maintain relationships with their colleagues.

Introduction

In this study we challenge the existing literature on caucuses in the U.S. Congress by arguing that the caucus system mirrors the formal organizing institutions, such as parties and committees, rather than acting as a structural counterbalance to these institutions. The argument presented here focuses on caucuses as *social* institutions that provide legislators with the opportunity to interact with colleagues who might share interests, concerns, or who might help them advance their position in the institution. Our study differs from prior studies on caucuses in two primary ways. First, while prior research conveys caucuses as institutions that help legislators at a structural disadvantage (such as junior members), we view the caucus system as a mirror of existing ingrained institutions that provide power to those who are leaders, more senior, or electorally safe. Second, we collect data on the complete population of caucuses and their members that allows us to engage in a social network analysis of caucuses. Our data allow us to discern whether those at a structural or social disadvantage effectively use the caucus system to connect to their colleagues and we find no support for the conventional wisdom. Rather, much like parties and committees, caucuses help those with power to maintain power and may provide no additional network advantage to legislators who are looking for a way to improve their status in the Congress.

Existing literature suggests that the caucus system, as an informal institution within the Congress, benefits those legislators who find themselves relatively disadvantaged within the formal legislative structure (see especially Ainsworth and Akins 1997; Hammond 1998). In other words, the caucus system constitutes an alternative institutional framework within which rank-and-file members, junior legislators,

preferences outliers, and other actors in formally weak positions can build their reputations in the legislature and gain influence on policy-making processes and outcomes.

Our conception of the caucus system as a social network challenges this view. We consider the caucus system to be an informal institution that allows legislators to build and maintain relationships within the House. Not all relationships are created equal, however, and being associated with some colleagues is more valuable to individual members than others. Therefore, legislators engage in the caucus system in an effort to maximize the social utility of their relationships. They achieve this goal by associating themselves with those actors who are already powerful within the formal institutional structure, because being connected to a party or committee leader, or to a senior colleague, is more valuable than being linked to just another rank-and-file member. As a result, we expect the caucus system not to serve as an alternative institutional structure utilized primarily by formally disadvantaged members of the House to counter-balance their structural weaknesses, but to constitute an informal institutional framework that replicates and reinforces the formal distribution of power and influence within the legislature. Our analysis of the caucus network in the 110th Congress supports this updated view of the purpose of caucuses. We show that formally powerful players, such as legislative leaders and senior members, are both more connected and more central within the caucus network.

Our study goes beyond previous research on caucuses in the Congress in theoretical, methodological, and empirical terms. Theoretically, the existing literature does not account for the inherent social nature of caucuses, while our paper is built on the

contention that research on legislative organization should account for the social relationships between legislators as much as the characteristics of individuals. In methodological terms, using social network analysis allows us to test the validity of existing accounts of caucuses in the House of Representatives beyond what traditional qualitative and quantitative methods have to offer. It allows us to evaluate the received wisdom on congressional caucuses in a more extensive and refined fashion. Finally, our dataset on caucus memberships is the most comprehensive one to date because we analyze legislators' self-reports of caucuses they joined and we use this information to generate complete caucus membership lists, which are not otherwise published.

Legislatures as Social Networks

The idea that networks are inherent in politics is not new, and political scientists have incorporated the concepts of interdependence into empirical and game theoretic models for many years. While political scientists have hesitated to adopt the distinctly sociological method and structural analysis that have become popular in other academic disciplines, political scientists would be remiss to conclude that the basic assumptions of rational choice theory are at odds with social network analysis. Knoke has offered that game theory and social network analysis are logically compatible because they both consider actors to be interdependent. "Game theory offers perhaps the best opportunity to integrate rational political theory with the structural approach" (Knoke 1990, 38). Social network analysis is becoming increasingly popular in political science and there is intellectual and methodological room for a new paradigmatic approach.

To date, there exist a few studies that examine legislatures as social networks. Some have examined social connectedness between legislators via cosponsorship behavior. Most notably, Fowler develops a measure of "connectedness" from bill cosponsorships that significantly predicts roll call vote choice, controlling for ideology and partisanship (2006). In addition, Gross and Shalizi examine cosponsorship networks while accounting for the systematic clustering of observations that is inherent in network data (2007; also see Burkett and Skvoretz 2001). Porter, *et al.* (2005) study linkages between legislators via committees and demonstrate connectivity between committees based on shared membership as well as hierarchical relationships between committees in the chamber. They use this information to reveal ideological preferences that predict roll call voting behavior, independent of party or other ideological measures. Whether through cosponsoring bills or committee service, there are clearly many ways for legislators to form networks with one another and studies are just beginning to tap the complexity and richness of these approaches (see also Whiteman 1995; Crisp, *et al.* 2004; Carpenter, *et al.* 2004; Esterling 2007; Koger, *et al.* 2008; Gimpel, *et al.* 2008).

Caucuses in the Congress

In this project we are interested in the social connections that legislators form through informal legislative organizations.[i] Most legislatures have formal means of organizing their members, most importantly through parties and committees. In addition, many legislatures have less formal organizations through which their members organize to express concern for common issues. In the United States Congress, for example, there are more than 400 legislative member organizations outside of the formal party caucuses,

which range in topic from the well-known Congressional Black Caucus to the Minor League Baseball Caucus.[ii]

The existing literature has identified three purposes of the caucus system. First, caucuses allow legislators to signal their policy preferences and priorities to their colleagues and constituents. Second, they serve as venues for the exchange of information within the legislature (Fiellin 1962; Ainsworth and Akins 1997; Stevens, Miller, and Mann 1974; Stevens, Mulhollan and Rundquist 1981). Third, they allow for the coordination of legislative action outside the formal party and committee structure (Fiellin 1962; Stevens, Miller, and Mann 1974; Loomis 1981; Hammond, Mulhollan and Stevens 1983; Miller 1990; Vega 1993; Hammond, *et al.* 1985, Hammond 1991, 1998).

Aside from specifying these three principal functions of the caucus system, the extant literature also identifies the primary users and beneficiaries of this informal legislative institution. As Ainsworth and Akins observe, much of the existing work on caucuses "has argued that caucuses augment the formal institutional structure of Congress by offering members a means to gain information and affect policy across conventional institutional boundaries, including those dividing committees, parties, and constitutencies" (1997, 408). In other words, existing research suggests that caucuses provide for an extensive, informal structure for legislative action that exists parallel to the formal institutional organization of parties and committees.

Previous work also suggests that this informal structure allows those legislators who are relatively disadvantaged in the formal institutional framework of legislative politics to counter-balance their structural weaknesses by engaging themselves in the informal political arena of the caucus network. Hammond's research, for example, argues

that that those who are advantaged in the formal institutional structure, such as party and committee leaders and senior legislators, are less likely to join and participate in legislative caucuses. Instead, it is junior members and those with no formal leadership position who use caucuses to advance their legislative objectives and to build their reputation and standing within the institution (Hammond 1998). Meanwhile, Ainsworth and Akins suggest that caucuses are composed of policy outliers, and that the caucus system exists to counterbalance the dominant committee system (Ainsworth and Akins 1997). According to this research, caucus membership is not just about signaling, information exchange, and policy coordination, but also critically about advancing individual legislators' political and policy ambitions.

Conceptualizing caucuses as a social network between legislators causes us to challenge the view that the caucus system is a sort of "welfare" system for disadvantaged legislators. We consider the social nature of the caucus system to be the integral reason for its existence, and we maintain that joining and participating in caucuses is about building and maintaining relationships and associations with other legislators. We also assume that some relationships are more valuable than others. These two basic insights compel us to question some of the key propositions of the existing literature on caucuses in the House, most importantly the suggestion that caucuses exist in order to advance the interests and positions of those disadvantaged in the formal legislative structure of parties and committees.

If it were true that the caucus system exists to supplement this formal legislative structure without replicating it, we should expect to find formally disadvantaged legislators to rise to "the top" of the caucus system. The people at the helm of the caucus

system should be different from those at the top of the formal legislative structure of parties and committees. If, on the other hand, caucus membership is about legislators trying to maximize the utility of their social connections, they should seek to connect to those colleagues who are already powerful within the formal legislative structure, such as party leaders, committee leaders, and senior members. If this were the case, however, we should expect legislators in formally powerful positions to be advantaged within the caucus system as well. According to this view of the caucus system, it does not simply supplement the formal legislative structure, but it replicates and reinforces the distribution of power and influence within it. If this proposition were correct, we should expect to find that:

Hypothesis 1: Legislators who are party or committee leaders should join more caucuses and be both more connected and more central within the caucus network.

Hypothesis 2: Senior members should join more caucuses and be both more connected and more central within the caucus network.

These hypotheses directly contradict the existing literature. If the existing conception of the caucus system reflects the make-up of the system, then party and committee leaders, as well as senior members, should *not* be more central in the caucus system because, according to prior studies on this subject, the caucus system exists to counterbalance the power networks found in the formal institutions within the House. However, if the caucus system is primarily a social network that provides legislators with the opportunity to cultivate valuable relationships, we should expect the structure of the caucus network to mirror the known power structure in the House.

Further, electoral vulnerability is an indicator of structural strength within the institution of Congress. If our theorized conception of the caucus network is accurate—that it exists to reinforce the power of those with high rank in the traditional institutional structures—then those who do not live in fear of their next election should be at greater liberty to join caucuses and use them to enhance their position in the network. We therefore expect that electorally safe legislators will join more caucuses and be more central and more connected via the caucus network.

Hypothesis 3: Electorally safe legislators should join more caucuses and be both more connected and more central within the caucus network.

If, on the other hand, the existing literature were correct in arguing that the informal social structure provided by membership in caucuses constitutes an alternative avenue for legislative influence for those disadvantaged within the formal institutional structure, we should expect these disadvantaged legislators to seek membership in numerous caucuses and to try to become key players in the caucus network.

While the extant literature on caucuses suggests that disadvantaged legislators are more likely to join and become key players in the caucus system than those who already hold positions of influence, it is somewhat vague on what it means by disadvantaged. In addition to using a social network framework to challenge this view, we offer a more targeted theory about what it means to be a disadvantaged legislator. The legislative characteristics described above—leadership, seniority, and electoral security—are examples of institutional advantages that some legislators have. However, some legislators may have other characteristics, such as race or gender, that place them at a disadvantage. Evidence suggests we should expect female legislators and racial

minorities to behave in a manner similar to other legislators with disadvantages—they should use the caucus system to help them overcome their disadvantages.

We can go further in testing the applicability of the alternative institutional structure proposition by examining the positions of other disadvantaged members in the legislature. While we have hypothesized that being at a structural disadvantage in Congress would not make one more likely to join and be connected via caucuses, we can also test whether being at a social disadvantage has the same effect (*e.g.*, being female or an ethnic minority). We can further ask whether being a member of a socially disadvantaged group makes one more likely to use the caucus system crutch than one who is structurally disadvantaged. Evidence shows that female legislators are at a disadvantage compared to male legislators when it comes to attaining positions of leadership, seniority, and preferred committee assignments (see McGlen and O'Connor 1998, 88-90). In addition, legislators who are ethnic minorities may face a disadvantage in achieving legislative goals (Volden and Wiseman 2007). While we do not dispute such evidence, we do not expect that being a member of a socially disadvantaged class makes one more likely to rely on the caucus system for network assistance than being a member of a structurally disadvantaged class. Since we expect the caucus system to mirror the existing institutions in the House, we expect legislators' structural positions to have a greater impact on their use of the caucus system than their gender or ethnic identity.

Hypothesis 4: Female and ethnic minority legislators are no more likely to join caucuses, to be more connected, and to be more central within the caucus network than male or Caucasian legislators.

Data

In social network analysis it is important for researches to analyze populations, as opposed to samples of populations, because it is mathematically uncertain what it means to take a random sample of relationships. For that reason, we have opted to study the complete population of the first session of the 110th Congress (2007) and its House legislative caucuses. We have chosen the 110th Congress because it is the most recent completed congress. Although the 110th Congress is a congress in which party control changed power, we do not have any reason to believe that the 110th Congress is an anyway sufficiently different from prior congresses such that we could not generalize from these results.[iii] Determining the population of caucuses and their members is a somewhat ambiguous, and certainly challenging, task.

The caucus data for this project comes from the 2008 Winter edition of the *Congressional Yellowbook*. This directory includes descriptive entries for each member of the 110th Congress and lists the self-reported caucus memberships for each legislator. We used these data to construct a complete population of the caucuses and caucus memberships for the 110th Congress because no comprehensive list of caucuses and their members exists. The House Committee on Administration lists 276 "official" caucuses on their website. These groups have registered with the committee as official House groups that follow specific guidelines; however, hundreds more groups are known to exist. The Congressional Research Service generated a list of caucuses in the 110th Congress in the spring of 2008 and listed 394 House or joint caucuses. However, our search of self-reported caucus memberships from the *Yellowbook* survey includes 559 distinct caucuses.[iv] We therefore constructed various samples of caucuses (*i.e.*, those with more

than 2 members, those with more than 4 members, those that only appear in the CRS report, those that only appear on the House Administration website, etc.) and conducted all analyses on all samples. We have found *no* substantive differences in these results and therefore report results from the sample of caucuses that have 2-or more members, which includes 452 caucuses. All discussion below is about the complete membership of these 452 caucuses.

Social Network Analysis

To analyze the caucus-based network in the House of Representatives, we have generated a relational matrix consisting of the members of the House of Representatives in which the ties between persons are determined on the basis of membership in the House caucuses (Borgatti, et al. 2002). The resulting "caucus network" uses common membership in one or more caucuses as a measure of strength. In other words, we are looking at an n x n adjacency matrix A (here: *438* x *438*), representing all the caucus-based ties in a network for the 110^{th} Congress such that a_{ij} represents the total number of joint caucus memberships. $A_{ij} = 0$ if the ith legislator does not share membership in any caucuses with the jth legislator and $1 \leq a_{ij} \leq 54$ if he or she does (54 is the maximum number of joint caucus memberships of any two members). Our data are undirected, or symmetric: if actor A and actor B are in at least one caucus together, then they are connected and we make no assumptions about the direction of their connection.

Given the large number of caucuses, and the inclination of Congressmen and Congresswomen to join a substantial number of them, it is not surprising to find that the resulting network is quite dense, as 93 percent of all possible ties are present. This high

density makes for a great degree of "reachability": all actors can "reach" one another through the caucus network. Moreover, the great majority of them are directly connected to one another, as the average geodesic distance (describing the shortest possible "walk" from one actor to another) is 1.066. Everyone in the Congress can be reached within 2 or fewer steps, and most (93.4 percent) in one single step.

The network density for Democrats and Republicans is quite high, but higher for Democrats at 96 percent, compared to 90 percent for Republicans. In other words, Democrats are more connected with each other in the caucus network than Republicans. This may be a reflection of the fact that the Democrats held the majority in the 110th Congress. For the two parties, we also seek to identify the number of ties that exist between network members from the same party relative to the number of ties between members who are not from the same party. The External-Internal (E-I) index takes the number of ties between members of one party to members of other parties, subtracts the number of ties between members of the same party, and divides by the total number of ties. The resulting index ranges from -1 (all ties are internal to the group) to +1 (all ties are external to the group). This index shows a prevalence of internal (92,090 or 52%) over external (85,790 or 48%) ties, yielding an E-I index of -0.04: members of the House are thus slightly more connected within their party than across parties. The caucus network is thus characterized by a modest degree of *homophily*, the tendency of individuals to form ties with similar others.

To measure the level of connectedness between any two actors more comprehensively, we rely on the concept of maximum flow, which considers how many actors that are directly adjacent to node A lead to pathways to node B. If this number is

large, A and B are more connected, since there are numerous ways for them to reach each other.[v] The maximum flow algorithm thus takes into account *all* connections between *all* actors, not just the most direct paths between actors. Maximum flow measures for Congress range from 0 to 6766, with an average of 2026.84 (standard deviation 1107.2). The pairs of Congressmen that have the highest maximum flow scores are listed in Table 1. It is notable that these dyads are comprised exclusively of Democrats. In fact, the only Republicans that appear in the top 100 most connected dyads are Rep. English (Pennsylvania-3rd) and Rep. Wilson (South Carolina-2nd).

[TABLE 1 HERE]

We can also observe that three legislators are particularly closely connected: Rep. Waxman (Democrat, California-30th), Rep. Van Hollen (Democrat, Maryland-8th), and Rep. Doggett (Democrat, Texas-25th). In the jargon of social network analysis, these three form an F-group, that is, a group of legislators who are connected to each other through particularly strong ties, which is defined as the largest number of ties that exists between any three or more actors in the whole network (52 in the case at hand). Also very closely connected to this trio is Rep. Moran (Democrat, Virginia-8th) with whom the three form a four-actor group based on 47 joint caucus memberships. Rep. Van Hollen currently serves as the Chair of the Democratic Congressional Campaign Committee, meaning his chief job is to help raise money for his colleagues—being well connected is a certain asset for this job.

These names also appear among the list of most central actors in the network. There are several ways of measuring centrality within networks; here, we use two. First, we are interested in determining which actors have more ties than other actors. An actor

with more ties might be considered more powerful than an actor with fewer ties, because more ties mean more avenues of access for information. For this we use degree centrality (Proctor and Loomis 1951; Wasserman and Faust 1994). Our second measure, Bonacich's eigenvector centrality (Bonacich 1972), does not merely examine the number of connections that Member A has within the network, but also takes account of the connectedness of those actors Member A is connected with. That is, the centrality of Member A is a function of her own connections, as well as the connections of those adjacent to her.[vi] Table 2 lists the 20 most central actors in the Congress network. Notably, several of the names we saw in the connectedness measures above also make it to the top of the list of most central actors (Rep. Waxman, Rep. McNulty, Rep. McIntyre, Rep. Doggett, Rep. Hinchey, Rep. McDermott, Rep. Van Hollen).

[TABLE 2 HERE]

Before we use our data to test our hypotheses about the structure of the caucus network, we would like to verify that using caucus memberships to describe patterns of relationships between legislators is logical and meaningful in expected ways. We therefore look for four expected relationships in the social network data. First, we expect that legislators from the same party will be more connected in the caucus network. If we did not find this to be true, we would question the validity of our data. Second, we expect that ideologically close legislators will be more connected to one another in the caucus network than legislators who are ideologically distant. Third, we expect that pairs of legislators who served more terms together will be more connected. Since serving more term concurrently provides the potential for more direct and *social* interaction, we would be surprised if we did not find this relationship in the data. Finally, we expect that

pairs who serve on more committees together will be more connected to one another. Committee service provides the opportunity for (potential) social interaction and we expect that the more legislators have had this opportunity the more likely they are to be socially connected to one another.

To confirm these expected, benchmark relationships we use maximum flow as a measure of connectedness between legislators and Bonacich's eigenvector centrality as a measure of centrality. Regarding party, we find that legislators from the same party are significantly more connected in the caucus network than pairs of legislators from different parties (maximum flow = 2078.5 versus 1974.7, t = -14.52, pr(t)=0.00). Next, we expected Representatives who are close to one another ideologically to be more closely connected within the network. Using Poole-Rosenthal NOMINATE scores to measure ideological distance, we find that legislators who are less than the population mean of .54 units apart from each other ideologically are more connected to one another than legislators who are more distant (maximum flow = 2087 versus 1964.3, t = 17.11, pr(t)=0.00). Third, we expect that legislators who have served more terms together will be more closely connected in the network. Comparing the mean connectedness of dyads where legislators have served less and more than the population mean of 3.87 terms confirms this expectation: pairs of legislators that have served more than 3.87 terms together are more connected to one another (maximum flow = 2600) than pairs who have jointly served fewer than average terms (maximum flow = 1533.86, t = 170, pr(t)=0.00).

We did not find support for our final benchmark relationship regarding committee service. We had expected that legislators who together serve on the same committee(s) should be more connected in the caucus network, but the analysis shows that dyads of

legislators who are on at least one committee together have an average connectedness of 2004.84, which is statistically significantly less than the average connectedness of legislators who do not serve on any committees together (2032.97, t = 3.25, pr(t) = 0.00). This negative effect is even more pronounced for legislators who serve on two or more committees together. Here, the average connectedness is 1907.09, which is statistically significantly less than the average connectedness score of 2028.8 for dyads of legislators who serve on one or no committees together (t = 4.28, pr(t) = 0.00). The finding that the voluntary membership in caucuses does not match up with committee assignments suggests that self-selection into caucuses entails greater preference coherence among caucus members than formal committee membership. Also, these results may be skewed by the distribution of this variable since 78 percent of dyads share no committee seats. Only 20 percent of dyads have one committee in common and 1.5 percent of dyads have two committees in common. While we did not find the expected relationship regarding committee service, in general our benchmark expectations held true, giving us greater confidence in the reliability of these data and the strength of the inferences we can draw from them.

While this social network analysis provides some intriguing insights into the caucus-based network in the House of Representatives, it has not yet addressed our expectations, laid out above, about who is connected to whom within the caucus network. Table 3 shows the results of T-tests we used to test our hypotheses.[vii]

[TABLE 3 HERE]

The second part of the social network analysis focuses on our theoretical proposition about the social utility of participation in the caucus network, which contradicts the argument of the existing literature that the caucus system constitutes an alternative institutional structure that allows the formally disadvantaged to advance their interests and positions in the legislature. Our expectation was that the caucus structure does not benefit those in structurally weak positions in the formal institutional framework of parties and committees, but that it replicates and reinforces the formal distribution of power as rank-and-file members seek to build and maintain relationships with already powerful and influential colleagues. Our two key hypotheses concerned the relative connectedness and centrality of legislative leaders and non-leaders on the one hand, and senior and junior legislators on the other. While we expected that leaders and more senior legislators should be both more connected and central (Hypotheses 1 and 2), the extant literature maintains that this should be the case for non-leaders and junior legislators.

The analysis confirms our expectations and undermines the propositions of previous research on caucuses in the House. First, we find that dyads where at least one member holds a leadership position have a higher average connectedness score (of 2150.34) than dyads where neither member holds such a position (1991.28). Dyads where both members are party leaders, meanwhile, have an even higher connectedness score, at 2298.46, compared to a connectedness score of 2023.03 for dyads where one or neither member is a leader ($t = -9.0$, $pr(t) = 0.00$). In terms of centrality, we find that the 52 party and committee leaders in the population of 438 legislators are more central in the network than non-leaders. This result is only marginally statistically significant at the 0.075 level, however.[viii]

Second, the average connectedness for dyads where neither member has served more than the population average of 6.16 terms is 1731.7, while the average connectedness for dyads where at least one member has served more than 6.16 terms is 2183.28, a statistically significant difference. In other words, more senior legislators are more connected within the caucus network. This effect is even more pronounced for dyads where both members have served longer than the population mean, as the average connectedness of these pairs of Representatives is 2525.50 (t = -64.01, pr(t) = 0.00). Senior members are also more central than junior members. The average Bonacich Eigenvector Centrality value for members who have been members of the House for longer than the average 6.16 terms is 6.9, compared to 5.3 for members who have served less than the average number of terms (t = -5.54, pr(t) = 0.00). Hypothesis 2 is supported.

Third, we used electoral vulnerability as an indicator of structural weakness. We hypothesized, contrary to existing literature, that electorally safe legislators would be more connected and more central in the caucus network. Evidence shows support for hypothesis 3. We consider a legislator to be electorally vulnerable if she has won her most recent election with a vote share of 55 percent or less.[ix] Electorally vulnerable members are less connected in the network. The average connectedness of dyads where neither member is vulnerable is 2044.24, while the connectedness of dyads where at least one member is vulnerable is 1313.6 (t = -31.28). If both members are vulnerable, their mean connectedness score is 1370.96, which is statistically less than connectedness in dyads where one or neither member is vulnerable (2048.66) (t = 33.6, pr(t) = 0.00). Finally, electorally vulnerable members are less central in the caucus network, with an average Bonacich Eigenvector Centrality score of 4.13. This compares to 6.30 for

members who are electorally safe. These findings suggest that vulnerable members do not use caucuses to improve their electoral fortunes in the future by signaling to their constituents both their policy priorities and their activism. Instead, they appear reluctant to join caucuses, which raises questions about the extent to which structurally disadvantaged legislators can use caucuses to improve their institutional positions. Perhaps it is the case that electorally safe legislators have the luxury of spending more time in Washington, D.C. cultivating relationships with their colleagues rather than spending it in the district wooing voters. Whatever the reason, the results show that legislators with an electoral advantage have the additional advantage of being more central and more connected in the caucus network.

The evidence presented thus far shows support for our contention that structurally disadvantaged legislators do not tend to use the caucus system as a means of advancing their status. Our data allow us to further examine this result and determine whether legislators who may be at a social disadvantage because of gender or race use the caucus system differently than those who do not face such disadvantages. Our expectation is that legislators who qualify as socially disadvantaged because of their descriptive characteristics will be no less disadvantaged in the network than those who are in the social majority (Caucasian males). Our results support this expectation. Dyads that include only Caucasian males are no more connected than dyads that include at least one woman or ethnic minority (African American, Asian American, Latino, or Native American). The magnitude of these connections are not large (2028.47 versus 2025.13), and not statistically significant. Moreover, male Caucasians are no more central in the network than females or minorities. Legislators who are female or ethnic minorities have

a centrality score of 5.89 whereas legislators who do not fall into those categories have a score of 5.99—a difference that is not statistically significant. These results suggest that legislators who may be at a social disadvantage because of their gender or race, do not use the caucus system to help them make-up the difference.

Our final analysis allows us to test the portions of our hypotheses that speak to the frequency with which members join caucuses. The prior tests examined members' connectedness and centrality in the network. However, we are also interested in the number of caucuses legislators join. As indicated above, our expectation is that leaders, senior members, and electorally safe members will join more caucuses, while women and ethnic minorities will not join significantly more caucuses than their counterparts. The results of a negative binomial model are presented in Table 4. The dependent variable in this model is a count of the number of caucuses a legislator has joined.

The results of the estimation show that legislators who have served more terms join more caucuses. This positive and statistically significant coefficient is consistent with expectations. While we had no prior expectations about party affiliation, the results show that Democrats join more caucuses than Republicans. This may be due to the fact that Democrats had a majority share of seats in the 110th Congress. With respect to electoral vulnerability, the positive and significant coefficient is consistent with our hypotheses. Legislators who win their elections by a greater electoral margin join more caucuses than those who win by smaller margins. The results with respect to party and committee leaders, female legislators, and ethnic minority legislators are mixed. The model in Table 4 includes an interaction of the terms for leaders and female or minority. This is because we suspect the rate with which women and minorities join caucuses may

be conditioned on whether they are party or committee leaders. The 110th Congress has several female and minority leaders (*e.g.*, Speaker Pelosi, Chairman Conyers, Chairman Rangel, etc.) and if our theory about caucus networks mirroring existing institutions is correct, then the relationship between leadership and female and minority legislators should be conditional.

[TABLE 4 HERE]

The negative and statistically significant coefficient on leaders indicates that Caucasian male party and committee leaders join relatively *fewer* caucuses than female and minority leaders. This finding is not consistent with our expectations. However, the coefficient merits further investigation because it is part of an interaction term (see discussion below). In addition, the coefficient for "female and minority" shows that female and minority non-leaders do not join caucuses at levels that are significantly different from their counterparts. This finding is consistent with our hypothesis 4 above.

To provide further interpretation of these findings and the interaction term we generated marginal effects and predicted probabilities (Tomz, et al. 2001; King, et al. 2000). After calculating the appropriate linear combinations and standard errors for the marginal effects of leadership and female/minority legislators we found that the only statistically significant effect is the effect of being a leader on caucus members for Caucasian men—and the coefficient is negative and significant (equivalent to the coefficient for "leader" in Table 4). Moreover, the predicted probabilities are such that legislators who have a structural and social advantage (Caucasian, male, Democrats, long-serving, electorally safe, leaders) will join a predicted 39 caucuses. Whereas,

legislators who are structurally advantaged (leaders, electorally safe, etc.), but who are also women or minorities will join a predicted 21 caucuses. Legislators who have no structural advantage, but have the advantage of being a Caucasian male will join a predicted 38 caucuses. Finally, a woman or minority legislator who has no structural advantage will join a predicted 21 caucuses. We therefore predict that having the social advantage of being a Caucasian male will lead such legislators will join an average of 38.5 caucuses; whereas having structural advantages such as leadership posts, electoral security, and many years of service will lead such legislators to join an average of 30 caucuses.[x]

The results regarding the propensity of legislators to join caucuses are therefore somewhat counter to our expectations. They show that being a minority, in terms of gender or race, has a stronger effect on one's probability of joining caucuses than being in the institutionally advantageous positions of leadership, majority party, electoral security, or longevity of service. While the results are counter to our expectations, when put into context of the results regarding connectivity and centrality they provide an interesting nuance to the story. We have found that party leaders, and others with institutional advantages, are more connected and more central in the caucus system, but not more likely to join caucuses. This somewhat counterintuitive result suggests that those with institutional advantages act as caucus magnets. While leaders themselves do not join more caucuses than non-leaders, they play a more critical role in the caucus system. Those without such institutional advantages are therefore likely to join more groups in an attempt to get close to those with the advantages. This puts the leaders in

the strong position of being critical to the network, in terms of centrality and connectivity, without having to join more groups.

In sum, the results of the network analysis completely support our expectations with regard to leadership, electoral security, and length of service—legislators fortunate enough to have these characteristics on their side are more central and more connected in the caucus network. This evidence is consistent with our theoretical framework that the caucus system mirrors the structure of existing legislative institutions such as parties and committees and the same actors are powerful in each system. However, we also find evidence that leaders join fewer caucuses and women and minorities join more, even while women and minorities are not more central or more connected via the caucus system. Those with social characteristics that put them at a disadvantage do seem to join more groups (perhaps in an attempt to make up for their social disadvantages), but being members of the extra caucuses has not moved them into positions that allow them to be more central or more connected than the powerful leaders. All together, the evidence is generally consistent with our updated perception of the caucus system—it helps the powerful retain power.

Conclusion

The contributions of this paper are threefold. First, from a theoretical point of view, we conceptualize the caucus system as a social network. This deviates from previous research on informal groups in Congress, which favors individualistic explanations and disregards the role of social relations in shaping political behavior. Our conceptualization, however, challenges the proposition that caucuses are venues for

formally disadvantaged legislative actors to counter-balance their structural weakness by building their standing in the informal institutional framework of the caucus system. We maintain that participation in caucuses is about maximizing the social utility of one's relationships within the institution, which implies that legislators seek to associate themselves with colleagues in positions of formal power. As a result, the caucus system replicates and reinforces, rather than supplements and challenges, the formal distribution of power in the legislature.

From a substantive standpoint, our results support our theoretical propositions, which means that the conventional wisdom regarding the role of caucuses in the U.S. House of Representatives is in need of revision. Our empirical analyses, using the most extensive database of caucuses and caucus membership to date, demonstrates that caucuses are not organizations used by junior representatives, legislators from marginal districts, women, and non-party leaders to make an impact. Instead, our research confirms our expectation that caucuses are institutions that favor legislative leaders and senior members, who are both more central and more connected in the caucus network. This is an important finding if caucuses fulfill their designated functions of facilitating information exchange and helping to coordinate legislative action, since the caucus system does not appear to be an alternative venue for these activities that challenges the formal legislative structure. Independently, we found that while congressional leaders are more central and more connected in the caucus system, they tend to join fewer caucuses than non-leaders, while women and minorities join more. In tandem with the social network analysis, we interpret these results to mean that legislators with structural

advantages are caucus magnets and others have a tendency to join many groups in an attempt, perhaps, to have connections to the leaders and senior members.

In methodological terms, our paper demonstrates the value of using social network analysis as a tool in investigating legislative politics and decision-making. We add to the burgeoning body of literature in political science that is borrowing sophisticated social network methods from other disciplines and adopting them to help answer questions of import and interest to scholars of politics. The inherent social connectedness of politics is intuitive but nearly wholly lacking from political science discourse. It is imperative that we integrate more rigorous theory and methods into the discipline that allow us to incorporate measures of relationships between actors into models that explain political behavior and institutions.

This paper provides an important update to the existing literature in legislative politics. Using a social network framework we demonstrate that informal legislative member organizations do not necessarily provide legislators who are institutionally weak a vantage point from which they can improve their position; rather, the same legislators that are powerful in the party and committee systems, are powerful in the caucus system. The insight we have provided about how legislators use the caucus system is a direct result of conceptualizing the caucus system as a social network. This research helps to demonstrate the utility of such methods. That being said, we have left open many areas for future research on this topic. We have not addressed the roles that caucuses play in the legislative process. Another important topic for future investigation concerns specifying the circumstances under which our propositions about the social utility of caucus membership hold. It may be the case, for example, that we can observe some of

the patterns highlighted in previous research when examining particular sub-samples of caucuses (e.g., especially active, important, or visible ones). In other words: much remains to be learned, and we hope to make a contribution to a greater understanding of this under-researched part of the literature both with this paper and in additional studies.

Table 1: Dyads with Highest Maximum Flow Scores

Name	Name	Maximum Flow
Waxman, Henry A. (Democrat, California-30th)	Van Hollen, Chris (Democrat, Maryland-8th)	6766
Waxman, Henry A. (Democrat, California-30th)	McNulty, Michael R. (Democrat, New York-21st)	6766
Van Hollen, Chris (Democrat, Maryland-8th)	McNulty, Michael R. (Democrat, New York-21st)	6766
Van Hollen, Chris (Democrat, Maryland-8th)	Doggett, Lloyd (Democrat, Texas-25th)	6370
McNulty, Michael R. (Democrat, New York-21st)	Doggett, Lloyd (Democrat, Texas-25th)	6370
Waxman, Henry A. (Democrat, California-30th)	Doggett, Lloyd (Democrat, Texas-25th)	6370
McNulty, Michael R. (Democrat, New York-21st)	McDermott, James A. (Democrat, Washington-7th)	6357
Van Hollen, Chris (Democrat, Maryland-8th)	McDermott, James A. (Democrat, Washington-7th)	6357
Waxman, Henry A. (Democrat, California-30th)	McDermott, James A. (Democrat, Washington-7th)	6357
Doggett, Lloyd (Democrat, Texas-25th)	McDermott, James A. (Democrat, Washington-7th)	6357
Hinchey, Maurice D. (Democrat, New York-22nd)	McDermott, James A. (Democrat, Washington-7th)	6326
Van Hollen, Chris (Democrat, Maryland-8th)	Hinchey, Maurice D. (Democrat, New York-22nd)	6326
Hinchey, Maurice D. (Democrat, NewYork-22nd)	Doggett, Lloyd (Democrat, Texas-25th)	6326
Waxman, Henry A. (Democrat, California-30th)	Hinchey, Maurice D. (Democrat, New York-22nd)	6326
McNulty, Michael R. (Democrat, New York-21th)	Hinchey, Maurice D. (Democrat, New York-22nd)	6326
Hinchey, Maurice D. (Democrat, New York-22th)	McIntyre, Mike (Democrat, North Carolina-7th)	6323
McIntyre, Mike (Democrat, North Carolina-7th)	Doggett, Lloyd (Democrat, Texas-25th)	6323
Van Hollen, Chris (Democrat, Maryland-8th)	McIntyre, Mike (Democrat, North Carolina-7th)	6323
Waxman, Henry A. (Democrat, California-30th)	McIntyre, Mike (Democrat, North Carolina-7th)	6323
McNulty, Michael R. (Democrat, New York-21st)	McIntyre, Mike (Democrat, North Carolina-7th)	6323
McIntyre, Mike (Democrat, North Carolina-7th)	McDermott, James A. (Democrat, Washington-7th)	6323

Table 2: Most Central Legislators in the Caucus Network

Name	Normalized Degree Centrality	Normalized Eigenvector Centrality
Waxman, Henry A. (Democrat, California-30th)	29.03636	15.14773
McNulty, Michael R. (Democrat, New York-21th)	28.67192	14.75355
Van Hollen, Chris (Democrat, Maryland-8th)	28.67192	15.0483
Doggett, Lloyd (Democrat, Texas-25th)	26.99381	14.20062
McDermott, James A. (Democrat, Washington-7th)	26.93872	14.12669
Hinchey, Maurice D. (Democrat, New York-22th)	26.80736	13.82869
McIntyre, Mike (Democrat, North Carolina-7th)	26.79464	13.24581
Larsen, Rick (Democrat, Washington-2nd)	26.34545	13.57402
English, Phil (Republican, Pennsylvania-3rd)	25.89626	12.92506
Payne, Donald M. (Democrat, New Jersey-10th)	25.23095	13.20031
Pallone, Frank, Jr. (Democrat, New Jersey-6th)	25.0784	13.02561
Moore, Dennis (Democrat, Kansas-3rd)	25.02331	12.66654
Smith, Adam (Democrat, Washington-9th)	24.7521	12.61438
Wilson, Addison G. (Joe) (Republican, South Carolina-2nd)	24.15883	11.78937
Holt, Rush D. (Democrat, New Jersey-12th)	23.98932	12.43882
Capuano, Michael E. (Democrat, Massachusetts-8th)	23.71811	12.46857
Moran, James P., Jr. (Democrat, Virginia-8th)	23.36215	12.21354
Maloney, Carolyn B. (Democrat, New York-14th)	23.25621	12.10695
Abercrombie, Neil (Democrat, Hawaii-1st)	22.73074	11.61301
McGovern, Jim (Democrat, Massachusetts-3rd)	22.67141	11.87619

Table 3: T-Tests for Hypotheses 1-4

Hypothesis	Description	Variable	Mean Connectedness (maximum flow)	Bonacich's Eigenvector Centrality	T	Pr(T)	Result
1	*Party/Committee Leaders are more connected*	Neither member of dyad is a leader	1991.28	-	-18.55	0.00	supported
		At least one member of dyad is a leader	2150.34	-			
1	*Party/Committee Leaders are more central*	Party/Committee Leaders	-	6.55	-1.44	0.08	supported
		Non-Leaders	-	5.87			
2	*Senior members are more connected*	Neither member of dyad has served longer than mean terms (6.16)	1731.70	-	-61.2	0.00	supported
		At least one member of dyad has served longer than mean terms (6.16)	2183.28	-			
2	*Senior members are more central*	Senior members (served at least 6.16 terms)	-	6.90	-5.54	0.00	supported
		Junior members (served less than 6.16 terms)	-	5.30			
3	*Electorally vulnerable legislators are more connected*	Neither member of the dyad is electorally vulnerable	2044.24	-	-31.28	0.00	supported
		At least one member of the dyad is electorally vulnerable (won prior election with less than 55%)	1313.6	-			
3	*Electorally vulnerable legislators are more central*	Electorally vulnerable	-	4.13	-5.28	0.00	supported
		Electorally safe	-	6.30			
4	*Female and ethnic minority legislators are no more connected than male and Caucasian legislators*	Both members of the dyad are male and Caucasian	2028.47	-	0.4669	0.64	supported
		At least one member of the dyad is a female or ethnic minority	2025.13	-			
4	*Female and ethnic minority legislators are no more central than male and Caucasian legislators*	Male Caucasians	-	5.99	0.283	0.78	supported
		Females and ethnic minorities (black, latino, asian, native american)	-	5.89			

Table 4: Negative Binomial Results

	Number of Caucuses Joined	
	coefficient	z
Terms Served	0.0440 (0.0090)	4.9
Party (1 = Republican)	-0.1633 (.0580)	-2.82
Electoral Vulnerability	0.0057 (0.0022)	2.62
Leader	-0.2353 (0.0974)	-2.41
Female or Minority	-0.0438 (0.0601)	-0.73
Female or Minority * Leader	0.2064 (0.1599)	1.3
Constant	2.9330 (.3515)	8.34
N	437	
Log pseudolikelihood	-1789.5	
ln(alpha)	-1.5833 (.0846)	
alpha	0.2053 (0.0174)	

Dummy variables for 49 states included but not reported; Robust, Huber-White standard errors reported in parentheses

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[i] We will use the term "congressional caucus" inclusively to refer to all informal legislative member organizations, informal groups, working groups, and task forces. We do not include formal party organizations, formal party committees, standing or ad hoc legislative committees.

[ii] The exact number of caucuses in the U.S. House is dynamic and varies depending on the criteria one uses to determine caucuses. The House Committee on Administration lists 276 legislative member organizations on its website (http://cha.house.gov/member_orgs.aspx). However, several hundred other such organizations are known to exist. The Congressional Research Service lists 394 caucuses in their report (Mansfield 2008). The Congressional *Yellowbook* includes mentions of 559 distinct caucuses in the membership listings for individual legislators.

[iii] To confirm this conjecture we analyzed the mean number of discharge petitions, days in session, and roll calls for the past 10 sessions of Congress (back to 1999). We found no statistically significant difference between the 110th Congress and these prior Congress, with the exception of the bills introduced in the first session. The 110th Congress had an unusually high number of bills introduced in the first session (2007), which is likely due to the change in party power after the 2006 elections. However, we have no reason to believe that such increased activity would appreciably affect members' decisions to join caucuses.

[iv] This number surely includes some error because many legislators reported being members of groups with very similar names (*e.g.*, the Medical Doctor's Caucus, Medical Malpractice Caucus, and the Medical Malpractice Crisis Task Force all appear in the *Yellowbook* with only 1 member each). We assume many of the similarly-named groups are actually the same caucus but erred on the side of caution and conservatively assumed that each caucus listed by legislators was a "true" caucus—there are 108 caucuses that have 1 or fewer members. A caucus has zero members if it is listed in the CRS report as existing but never appears in the *Yellowbook* as having any members.

[v] The logic of this measure suggests that it is the availability of pathways between actors that makes a linkage strong, as opposed to distance or some other measure of connectedness. For example, if member A needs to send a message to member Z and she can only use member C to send it, the connection between A

and Z is weak. On the other hand, if A can send a message to Z via C, D, E, F, or G, then the connection between A and Z is stronger (Hanneman and Riddle 2005).

[vi] For more details, also see Fowler 2006, p. 465.

[vii] We are unable to do a multivariate or regression analysis to test these hypotheses because the dependent variable we wish to test is a network measure. Using a measure of network centrality or connectedness as a dependent variable in a traditional regression model would violate the basic assumptions of regression and independence of observations (see Scott 2000; Wasserman and Faust 1994). Therefore, to test these hypotheses we have relied on descriptive network analysis and basic t-tests.

[viii] Leaders include Speaker, Majority and Minority Leader, Majority and Minority Whip, Committee Chair and ranking committee member.

[ix] We also considered a less conservative level of 60% and found similar results.

[x] Predicted probabilities were generated using "Clarify" (Michael Tomz, Jason Wittenberg, and Gary King (2001). CLARIFY: Software for Interpreting and Presenting Statistical Results. Version 2.0 Cambridge, MA: Harvard University, June 1. http://gking.harvard.edu)