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Invaluable Involvement:
Purposive Interest Group Networks
in the 21st Century

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Abstract

We present the first social network analysis of purposive and coordinated interest group relationships. We utilize a network measure based on cosigner status to United States Supreme Court amicus curiae, or friend of the court briefs. The illuminated structures lend insight into the central players and overall formation of the network over the first seven years of the 21st century. We find that the majority of interest groups primarily partake in coalition strategies with other groups of similar policy interest and ideological character. This is in contrast to previous literature that focused only on one or the other. The factions are tied together by various central players, who act as hubs, leaving a disparate collection of organizations that work alone. Network analysis provides evidence, for example, that the National Wildlife Foundation, the National Association of Criminal Defense Lawyers and the American Civil Liberties Union are all particularly strong groups, but exploit different central roles. Ultimately, our work and data suggest several subsequent questions and opportunities pertaining to the coalition strategies of interest groups.

Winning in front of the courts, the legislative arena, or the executive branch is not a solitary act. While interest groups use a variety of techniques to exert influence, coalition strategies are the dominant lobbying technique. That is, interest groups do not work alone. However, interest group coalitions remain significantly understudied.

Hula (1999) argues that interest groups form coalitions to pursue their strategic goals at reduced costs, shape public debate by influencing a broader platform, gather information, and receive symbolic benefits. Further, he emphasizes the need to explain interest group coalitions, which can be viewed as institutions of collective leadership, bargaining, and strategy among member organizations. In other words, it is necessary to understand interest groups as part of a network and the relationships among them. In this piece, we examine the networks of interest groups for insight into the central players and key relationships among them.

Amicus curiae briefs, or friend of the court briefs, are a prime example of interest group coalitions formed to impact governmental decision making and policy. These coordinated, purposive interest group networks are the focus of our research. Examining interest group networks will lead to a better understanding of the interaction of the multitude of players and groups in our democratic system. Contrary to previous attempts at interest group network analysis, these analyses provide firm, specific, and public commitments of interest groups on matters of great concern. Thus, this network matters most to interest groups.

We achieve a unique perspective by applying network theory and methods to the study of interest groups. For example, network theory suggests that more open networks (weak ties and connections) results in a higher probability of introducing new ideas and opportunities (Granovetter 1973). Ideologically extreme liberal or extreme conservative groups are expected to have tighter networks. We examine the networks created over time and subsequently disaggregate the networks to illuminate the most valuable member organizations. Understanding the existence and density of brokers within networks, which serve as the bridges that fill structural holes, will be useful in further characterizing and distinguishing interest group networks.

A network perspective provides a lens where the attributes of individuals are as important as the relationships and ties with other actors in the network. This new theoretical perspective is particularly apt for the study of interest groups. After all, the relative strength of interest groups is directly tied to their relationships. Rather than by solitary action, interest groups

benefit and suffer by virtue of their ties. Thus to understand the behavior and success of interest groups requires a holistic approach that accounts for their purposive and coordinated actions.

1 Interest Group Networks

Classic works in the interest group literature have sought to understand why interest group coalitions form. A discussion of resources initiates most scholarly work on this topic. That is, scholars maintain that coalitions serve as an economical and efficient means to form a more powerful bloc (e.g., Berry 1977, Berry & Wilcox 1989, Schlozman & Tierney 1986, Hula 1995, Hojnacki 1998, Whitford 2003). Hojnacki's (1998) theory of strategic coalition formation summarizes the factors influencing coalition formation as perceived strength of the opposition, previous experience in a coalition, whether the group is pivotal, and whether the group is critical to the success of the coalition.¹ Coalitions then signal broad support to policy makers on an issue (Mayhew 1974, Kingdon 1981, Esterling 2004, Mahoney 2004).

Social network theory also suggests that alliances form out of the pursuit for access to resources and information (Gilsing et al. 2008). That is, coalitions function as 'pipelines' through which information and knowledge flow. The incentive for interest groups to form networks appears to be similar to that of firms: to share information and to diffuse information more quickly or to enhance the efficiency of cooperation (Teece 1986, Whitford 2003, Gilsing 2005, Gilsing et al. 2008). In addition, there are control benefits, such as sanctions, reputation, and trust. The social network literature discusses the positive effects of networks on group performance; growth (Powell, Koput & Smith-Doerr 1996), speed of innovation (Hagedoorn 1993), organizational learning (Hamel 1991), and reputation (Stuart 1998).

Bacheller (1977) emphasizes the importance of both group characteristics and group relationships for a complete understanding of the role of interest groups. The interest group literature provides an extensive and thorough

¹Some interest coalition formation literature distinguishes types of interest groups, arguing that different types of interest groups are more or less likely to join coalitions (Clark & Wilson 1961, Caldeira & Wright 1990). This suggests that one should account for the type of interest group, such as whether it is a trade association, citizen group, or union, though Mahoney (2004) did not find this distinction to be statistically significant in their recent work.

examination of individual group characteristics. In spite of strong interest in group relationships, (e.g., Heinz et al. 1993, Carpenter, Esterling & Lazer 1998a), heretofore, there has not been much empirical work on group relationships. Whitford (2003, p. 46) states that “as recent studies suggest, the network aspects of group coordination - the specific interconnections between groups - may be as important as whether participation occurs at all.” Our work brings renewed focus on the interconnections between groups.

Using coalitions formed by the interest groups themselves when signing onto an amicus brief, we arrive at purposive, coordinated actions by the interest groups better suited for our questions about the effectiveness of interest groups. Our research builds primarily on the path breaking work of Koger & Victor (2009), LaPira, Thomas & Baumgartner (2009) and Scott (2007).² Similarly, we agree with Whitford (2003), who explicitly argues for the use of network analysis as applied to amici and Schlozman et al. (2007) who use the filing of amicus briefs as a form of “political voice.” The latter is of particular relevance and guidance, in so far as they suggest the importance of studying amicus briefs as indicators of *cooperative* alliances; however their piece stops short of a network analysis of such.

LaPira, Thomas & Baumgartner (2009) are one of the first to map interest groups. They use the Lobbying Disclosure Act (LDA) data to measure interest group networks as joined by issue areas. This piece links groups if they work on the same topic. They identify which policy areas are highly central to the overall network structure and show that central and peripheral policy domains are populated by different types of lobbyists: policy generalists versus specialists. A drawback of this work for our purposes is that interest groups are being mixed regardless of whether they are for or against an issue and whether or not there was coordinated action. One would expect that there are areas where the sides are not equally distributed in terms of resources and networking, and this is muddled in network measures based on the LDA.

Using campaign finance data to build interest group networks gets at direction better. This path has been forged by Koger & Victor (2009). Koger

²Scott’s (2007) work which identifies interest group coalitions via archived websites and interviews is particularly appealing because he tries to identify all players in a coalition. However, this is unrealistic for all networks, due to many coalitions not being reported in the press or recorded on the participating group’s website (e.g., Mayer 2007, Cummings 2008). In addition, interviews are difficult to use due to the passage of time and the difficulty of collecting full network information across all possible issues.

& Victor (2009) focus on the links between members of Congress and interest groups. Here interest groups are in the same network if they gave a contribution to the same member of Congress. However, groups can be associated almost by accident as there is not likely to be coordination for almost all of the contributions. In addition, groups are crossing issue areas in these network measures. That is, groups are in a network because both gave a contribution to a particular member, but the first group may do so because of interest in *issue A* whereas another group may contribute to the same member because of interest in *issue B*. Finally, even though we may expect lobbyists to primarily lobby their friends in Congress (Hall & Miller 2008, Box-Steffensmeier & Dow 1992, Box-Steffensmeier & Lin 1997), two independent interest groups might contribute campaign donations to the same legislator on the same issue, e.g., *issue A*, but be contributing to move the member in opposing directions.³ Thus while the donation data provides more detail in terms of interest group networks, it still lacks the direction we would desire from an ideal measure.

As suggested above, a flurry of recent and notable scholarly activity has surrounded the coalition strategies of interest groups. The reason for this is undoubtedly twofold: 1) the questions are of great interest to a host of political scientists, having received an unusually low amount of empirical attention in the past; and 2) technological advancement in personal computing has made the empirical analysis of large, aggregate data sets possible. Each network measure, including the amicus brief cosignatories, has its own pros and cons. Ultimately, each serves to illuminate a different aspect of a host of potential relationships. Below we detail our theoretical expectations about interest group coalitions and then test the extent to which the amicus curiae briefs cosignatories network confirms or casts doubt on our expectations of interest group networks.

1.1 Resource Mobilization Theory & Networks

The linkages chosen to derive the interest group network implies the underlying theory. That is, the choice of the link conveys how one believes lobbyists work together. We argue that a purposive, coordinated, and public linkage provides the most theoretically sound approach to characterizing the network

³This may occur the most for members that are moderate on the issue or cross-pressured by ideology or constituency groups.

of interest groups. The two previous approaches that have tied together interest groups have focused on: 1) the same issue area (studies based on issue area linkages and the LDA data set), or 2) contributions to the same candidate (campaign donations). To those we add a third linkage based on publicly visible work in the same issue areas plus a shared ideological orientation.

While at first blush these appear as only methodological or measurement concerns, theoretically these approaches are related to pluralist, representative and purposive frameworks, respectively. If one contends that interest groups working on the same issue are sharing information, that suggests a kind of optimistic and transparent perspective of interest groups based on pluralist notions Truman (1951). In contrast, if one thinks that interest groups who contribute to the same candidate are working together, a representative focus is brought to bear. In this case communication is largely through the electoral process and money buys influence or at least access, which harks back to Hall & Wayman's (1990) classic article (see also Lowi 1979, Wright 1990). Alternatively, we argue that interest group coalitions are, in actuality, only those that are directed, coordinated and visible to a third party. This approach has roots in theories of resource mobilization (e.g., Walker 1991) and organizational behavior (e.g., Wilson 1973). Such is, at the very least, a more complete measure that contains aspects of the two prior frameworks.

The resource mobilization school provides key insights into interest group network formation. Here organization is largely a purposive act Hathaway & Meyer (1997) for shared survival (McCarthy & Zald 1977, McCarthy 1987). In order to attain their goals, groups need to engage collective action and social choice simultaneously. Via the pooling of their resources and the creation of some exhibit of their shared policy preferences, groups choose to work together. In particular, interest groups occasionally do so in the public's eye. Because signing an amicus brief is not just an act of persuasion but also a symbolic gesture, in the sense that it can be an illustration of their work for their constituency, the brief also helps to maintain their public status among the hierarchy of interest groups.

Of course, groups must also maintain some autonomy, or risk dissolution to the members of their coalition. Thus interest groups have to balance cooperation and differentiation. They have to be different enough as to attract a distinct constituency despite wanting to cooperate when they believe it will be helpful to attain mutually valued resources. Such is at the foundation of economic theories of organizational behavior (Wilson 1973). Interest groups

need a niche in order to maintain their existence. Collective action here is thus a delicate balance. However, there are times when working together greatly outweighs the risks of exposing shared issue dimensions.

Staggenborg (1986) showed that the threat of big losses or gains is the best motivator for organizational cooperation, which largely supports our study of U.S. Supreme Court cases, as the range, jurisdiction, and visibility of the cases are the highest in the land. Furthermore, because the cases before the court largely concern “inclusive goods”, Olson (1965) provides good reason to expect the likelihood of organization to be greater here than elsewhere. When the resulting goods have near universal effects, the potential for shared benefits motivate shared efforts. Such is often not the case, for example, in many legislative activities, where goods are particularistic or “exclusive.”

The underlying networks of interest groups are especially difficult to perceive. It is widely acknowledged that they exist, but interest groups are unlikely to be forthcoming about their contacts, as their livelihood depends on restricted access to these sources and the public perception of a niche (see Mayer 2007, Cummings 2008). Furthermore, the work of interest groups is both autonomous and cooperative. At times interest groups work alone to accomplish goals particular to their constituency. At other times, interest groups join together to achieve mutually beneficial goals. We exploit theories of resource mobilization and organization to specify the times at which we might expect these key networks of interest groups to become visible, namely in *amicus curiae* briefs before the U.S. Supreme Court.

2 Data & Network Structure

In order to study the formation of and key players in interest group networks, we utilize a particular, yet comprehensive, interest group database. We collect a list of all the interest groups that have signed onto an *amicus* brief from 1953 to the present. The analysis below, however, only presents data from the first seven years of the 21st century. From this list, we use cosignatories to map the first (as far as we are aware) comprehensive, purposive, and coordinated interest group network.

In Supreme Court cases, various parties with related interests submit briefs to the Court in favor of the petitioner, respondent, or in some cases, neither. Cosigners on *amicus curiae* briefs coordinate the content of the

briefs and signatories.⁴ Often times, these cosigners are comprised of interest groups. A large percentage of amicus briefs come from interest groups (see Table 3.3, Collins 2008). We explore the use of this coordinated action as a measure of interest group networks. We argue that amicus curiae cosigning provides a better measure of interest group networks than the existent, yet nascent, literature.

The earliest papers found that approximately fifty percent of interest groups indicated in surveys that they have participated in writing amicus briefs when asked about activity in the last two years, (e.g., Solberg & Waltenburg 2006, Scheppele & Walker 1991). Schlozman & Tierney (1986) ask interest groups about litigation or otherwise using the courts and reported that over seventy percent of groups did so. Our comprehensive list of amici will allow us to get as reliable measure as possible because we can compare it to databases of interest groups. We will also be able to see if the number of groups participating in the process has increased over time as some have posited. Kearney & Merrill (2000) find that the number is closer to eighty percent and Almeida (2004) finds seventy-six percent. Whitford (2003) argues that because judicial strategies are high cost efforts, coalitions are optimal strategies, and concludes that the eighty percent participation rate over two years seems reasonable.

In short, the network measure has a number of desirable properties. First, it is naturally occurring in the function of government activity. Our data is not based on surveys, contrived settings or incidental links, but culled from the actual, purposive and coordinated work of interest groups in front of the Court. Second, we come close to a complete network of the population of interest, with an increasing probability of capturing the full population given larger time spans. Third, the data we have gathered are longitudinal, which is of fundamental merit for those, like us, interested in the evolution of complex social networks (Burt 2000, Rogers 1987, Marsden 1990, Christakis & Fowler N.d.).

⁴The term “cosigners” is sometimes used to distinguish the individual or group that initiated the brief from others that signed onto it. We use the term here to refer to everyone on the brief as a cosigner (see also Gibson 1997). We would like to distinguish the initiator and use the associated network methods that take this into account, however, it is not empirically possible in the data.

2.1 Graphing the Networks

Who are the key opinion leaders and influentials? Where does influence flow? Who are the “connectors” (those who connect the unconnected in the network) and the “mavens” (who are sought out for knowledge)? Where is the power in the networks? The first major part of the project and the focus of this paper applies basic network analysis to the interest group arena. We begin to answer the questions posed by mapping the full network created by interest group interaction in signing amicus briefs.

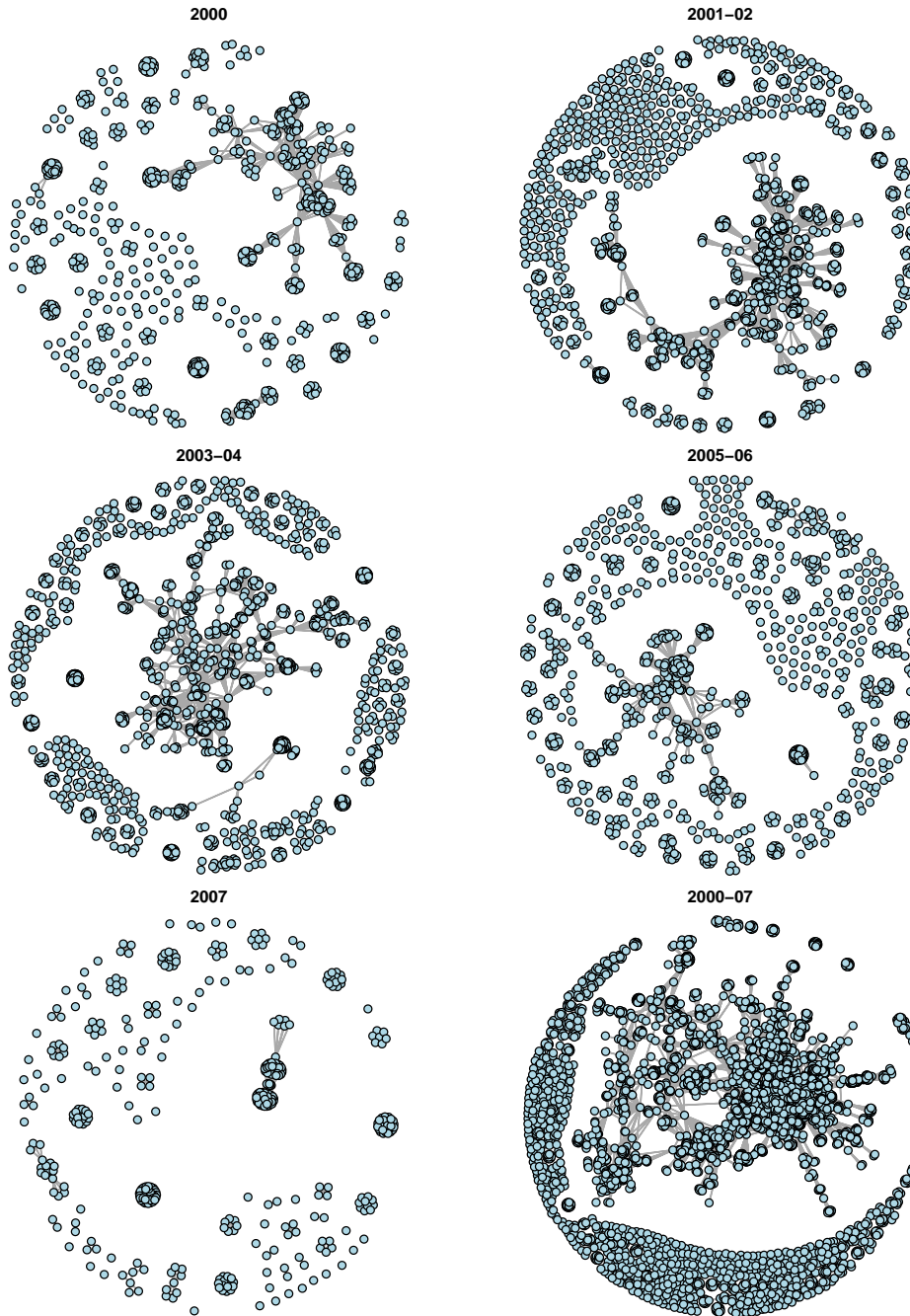
Figure 1 displays the network mapping of over 4,100 unique interest groups that have signed amicus briefs on USSC per curiam or full opinions from 2000 to 2007. We have chosen the most recent cases available from the Spaeth (1953) data set and broken them up in terms of congressional cycles, where possible. In addition, we look at the network across all seven years, recognizing that ties between groups will not always be apparent within short windows of time. Specifically, there are 4,111 organizations that signed onto 2,469 amicus briefs on 456 cases in this data set.

Here the nodes represent interest groups. Interest groups that are linked together by virtue of signing the same amicus briefs are denoted by way of a joining edge. While the linked groups have cosigned at least one or more amicus briefs, the stand-alone groups have signed one or more amicus briefs without cosignatories in this period.

All of the interest group relationships are symmetric, or undirected, because they represent a mere cosigning of an amicus brief. Despite the fact that one of the organizations is listed first as the filer of the amicus brief, to give more weight to such an organization would be inappropriate. Often times the reports are filed alphabetically or in some other manner that gives no indication as to a lead signatory (see also Gibson 1997). Thus, without further examination of the briefs, all cosignatories should be considered equally in the network. Thus the data does not specifically indicate which group first contacted its cosignatories or did the bulk of the work on the brief. However, the mapping of the full network does provide invaluable insight into the most likely first movers and dominant players.

Reciprocity is an invaluable measure in the study of directed networks. It tells the extent to which any group sought out by another group returns the favor. More formally, reciprocity is the fraction of pairs of nodes within the graph that are symmetric. Here the interest group links are undirected and thus we arrive at a perfect fraction of symmetry, or 1. Unfortunately,

Figure 1: Interest Group Networks Over Time



our data does not tell us about the direction of the contact, i.e., which group contacted which first or which took the lead on the amicus brief. Such is as it should be, because interest groups that sign amici do so in no particular order. Rather, in an attempt to understand the key players in the network we gather perspective from the quantity of signatures and the resulting network structure.

Figure 1 illustrates that over time the tightly grouped factions are indirectly linked to other factions via various hub organizations. In the final summation figure with the full mapping of 2000 to 2007 signatories, there is the obvious presence of various solitary workers on the periphery of the graph. However, it is also clear that as time goes on more direct and indirect links are illuminated, suggesting much more complex and distant relationships.

In this analysis, we have chosen to only link those interest groups that have signed the same brief. An alternative approach would be to link all interest groups that sign a brief in the same direction (i.e. for respondent or petitioner or neither). Such would certainly create a denser or more linked network of interest groups based on both issue area and ideological direction; however it would not signify any sort of coordinated action on the part of the signers. Coordinated action is central to our beliefs about interest group networks, because it denotes a deliberate link between organizations. While interest groups undoubtedly interact broadly, an interest group network based on amicus briefs suggests, at a minimum, a regular contact, or a “weak tie” (Carpenter, Esterling & Lazer 1998*b*).

We can look at the centrality, transitivity, size, and density of networks and their ability to evolve over time as indicators of interest group coalition strategies. Table 3 provides some basic properties of the network. At the structural level, the density of the network is the number of edges divided by the number of possible edges in the graph. In substantive terms, we might think about density as the connectedness of the entire network of interest groups. Years and cycles range from .011 to .046, but the overall low .006 score suggests that many of the interest groups are not connected to as many of the others as they could be. Interest groups do not reach out to all stakeholders, but only a certain set of them. Thus instead of many weak ties, the networks appear comprised largely of factions.

Transitivity moves us to considerations of indirect relationships. It tells us the extent to which two interest groups indirectly linked by a third interest group are also directly linked themselves. This is almost always the case in the interest group networks. It appears that in interest group networks being

a *friend of a friend* also means *you are a friend*. Interestingly, the minimum value is .846, held by the 2000 to 2007 window. Thus as opportunities for interest group coalitions increase, so too does the presence of indirect links between groups. In shorter periods, however, we note the greater potential for groups to enter that are part of interconnected relationships.

The general centralization score provides a kind of average value of the centrality of all the interest groups in the network. More formally, it is the difference between the maximum and mean node centrality score conditional on the number of nodes (see below for a discussion of node centrality). Here the centrality scores for most of the interest groups are quite similar resulting in a low centralization index for the total network of .040.⁵

Table 1: Interest Group Network Properties

GRAPH	2000	2001	2003	2005	2007	2000
STRUCTURE		-02	-04	-06		-07
<i>Density</i>	0.017	0.011	0.017	0.012	0.046	0.006
<i>Transitivity</i>	0.864	0.867	0.976	0.950	0.929	0.846
<i>Centralization</i>	0.081	0.054	0.055	0.060	0.160	0.040
<i>Reciprocity</i>	1	1	1	1	1	1
<i>USSC Cases</i>	69	140	120	107	20	456
<i>USSC AC Briefs</i>	311	763	640	624	131	2469
<i>Interest Groups</i>	730	1581	1660	1041	430	4111

Signatories refers to the total number of organizations that signed an amicus curiae (AC) brief in the respective period.

We believe that these networks will be shown to be even more illuminating when considered over even longer time spans. True interest group networks are unlikely to be formed or demonstrated in a short period; rather we expect them to develop over time as trust accrues between groups of common interest and shared values. In addition, looking at a short time span engages only a small portion of the total issues encountered by the USSC. While large percentages of interest groups are known to sign onto amicus briefs, such will not be evident in a short window, such as a year. A congressional cycle and

⁵The slight outlier here is 2007, with its small number of cases and interest group cosignatories.

the seven year window presented here, however, afford greater insight into the networks of interest groups.

Interestingly, our the full interest network escapes an easy characterization. The distribution of centrality suggest that both circle and star networks exist simultaneously (see Barabási 2002). Rather than one or the other, clusters of tightly linked organizations, linked circularly and individually, are networked to other clusters by hub organizations, creating a sort of large scale star network.

This glance into the network structures motivates questions of structural equivalence. To what degree are different groups exchangeable in these networks? How are their positions similar across time and in different types of cases? How are the positions of different groups in different cases similar? For example, an interest group may have a position in a network on a case involving patents that is quite similar to a group's in a case on free speech. This work allows for structural theories that generalize beyond issues, which we believe to be a large contribution to the interest groups literature. Thus, we now turn to an examination of the role of particular groups within the network.

2.2 Central Players

Hanneman & Riddle (2005) state that all sociologists would agree that power is a fundamental property of social structures. Importantly, social network analysis has explicitly developed methods to study power. There are a variety of network measures that are useful for characterizing and understanding interest group networks at the node level. Krebs (2004) discusses some useful measures, such as betweenness, which “measures the control a node has over what flows in the network - how often is this node on the path between other nodes?” And closeness, which measures how easily a node can access what is available via the network - or how quickly can this node reach all others in the network? A combination where a node has easy access to others, while controlling the access of other nodes in the network, reveals high informal power (Krebs 2004). Here we attempt to locate the real wielders of power among the interest groups.

Table 2 provides some basic properties of the network. Various centrality indices help characterize the extent to which any particular group plays a central role in the network (Freeman 1979). In other words, centrality helps us understand the key interest groups in the network. Here we list the degree,

Table 2: Interest Group Node Properties

NODE	2000	2001	2003	2005	2007	2000
CENTRALITY		-02	-04	-06		-07
DEGREE						
<i>Mean</i>	12.4	17.3	27.5	12.0	19.9	23.6
<i>Std Dev</i>	(11.5)	(19.0)	(33.7)	(18.9)	(20.4)	(29.1)
<i>Max</i>	71	103	119	74	88	189
<i>Min</i>	0	0	0	0	0	0
BETWEENNESS						
<i>Mean</i>	157.0	763.2	563.8	95.6	6.0	4031.1
<i>Std Dev</i>	(1037.1)	(5429.3)	(4108.2)	(622.8)	(43.3)	(28658.8)
<i>Max</i>	14111.3	122707.5	112326.5	10944.2	528	821571.7
<i>Min</i>	0	0	0	0	0	0
CLOSENESS						
\forall	0	0	0	0	0	0

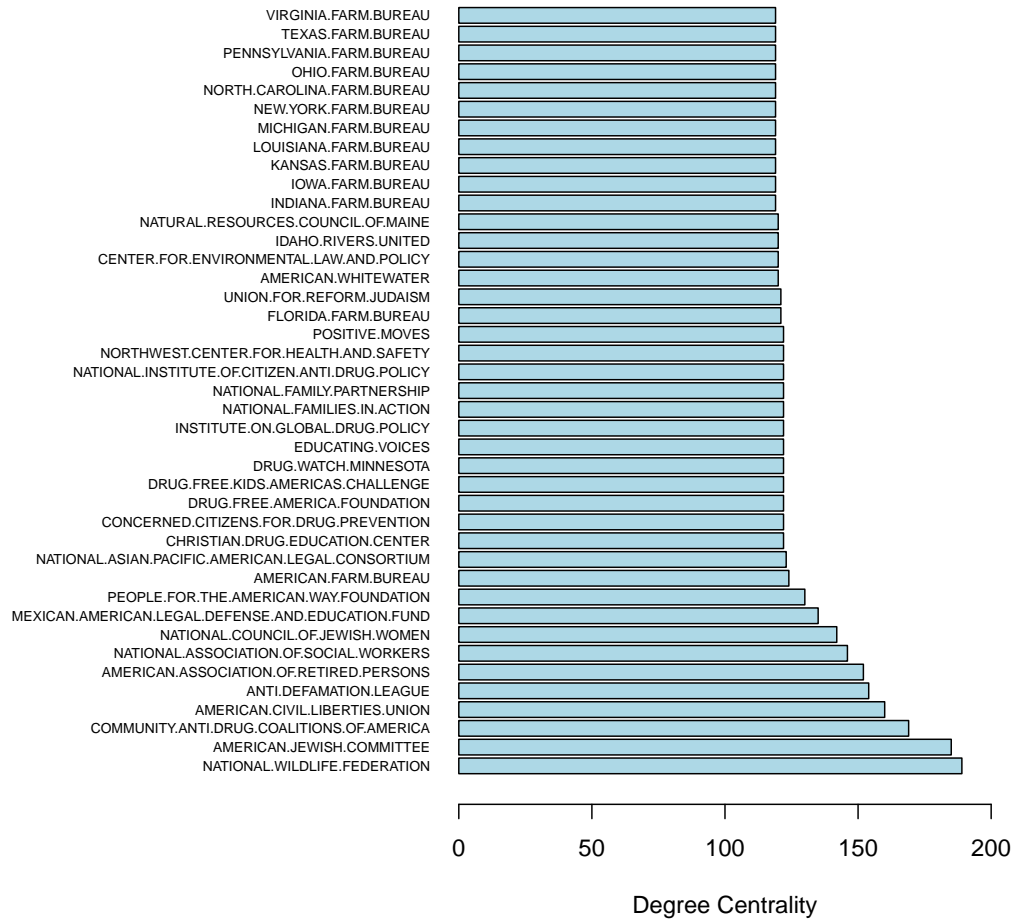
Node structures refer to the average and range for the respective period with standard deviation in parentheses.

betweenness, and closeness of the groups, which are typical network measures of centrality.

In our maps of interest groups, degree is simply the number of interest groups directly linked to any other single group in the network. Degree helps determine centrality in so far as interest groups with high degree can be thought of as being directly connected to other interest groups. High degree interest groups are well connected in that they are signatories on many amicus briefs. A high degree might therefore signal key players that bring together other interest groups on common issues. In the network, several interest groups signed an amicus brief alone, yielding a minimum degree of zero, however, the best linked interest group, the National Wildlife Foundation (NWF), was linked to 189 others.

Figure 2 presents the top percentile of degree centrality interest groups. Given the multiple case framework of the network, the links can be over several cases and thus repeat players are typically, but not always, those with a higher degree. Table 2 suggest that on average degree ranges from 12

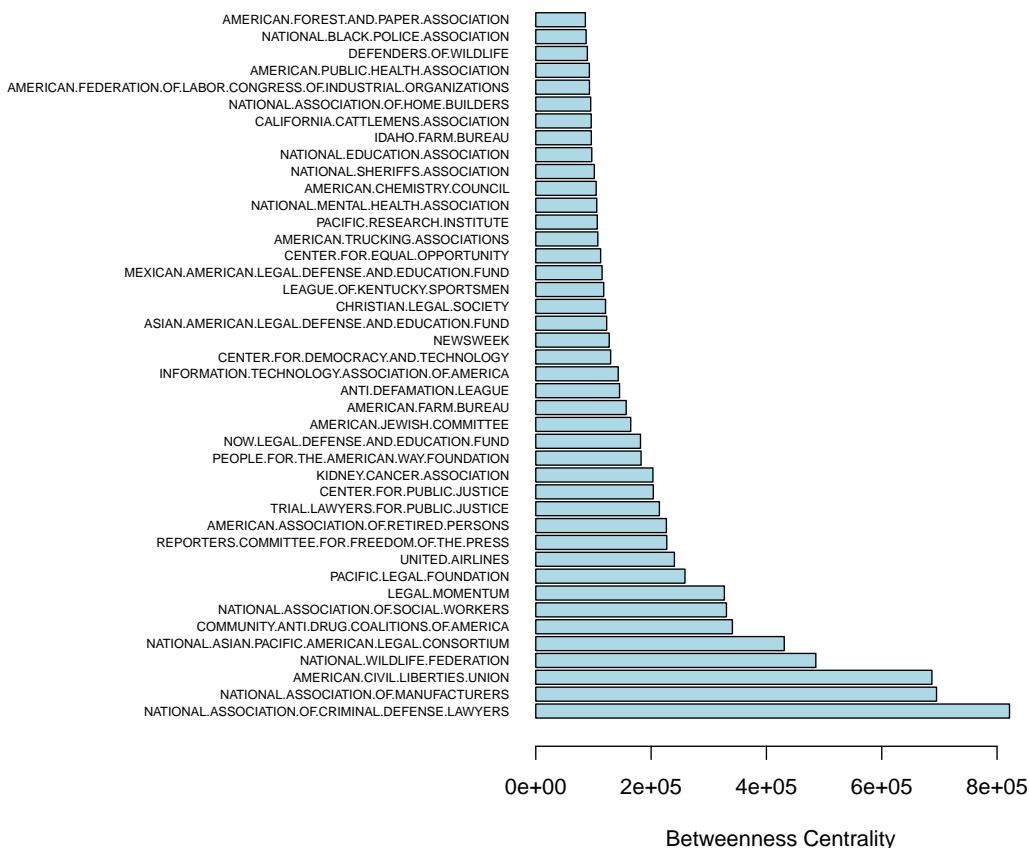
Figure 2: Top Percentile Degree Centrality



to 27.5 across the time frames. The total average degree is 23.6, implying that over the seven year period any interest group amicus brief filer would have about 24 cosigners.

Another way an interest group might play a central role is as a middleman between two other groups. Betweenness measures the number of times an interest group lies on the shortest path between several other groups. High betweenness interest groups are then directly along the stream of communication between other interest groups. The average period betweenness ranges

Figure 3: Top Percentile Betweenness Centrality



from 157 to 4031 across these networks. Such a large range illustrates that some interest groups belong to large and intertwined networks, while others appear as a friend of the Court alone. The highest number, in this case for the National Association of Criminal Defense Lawyers (NACDL), suggests that removing this organization would have a disproportionately large impact on the connections of other groups to each other. The high betweenness groups are less easily categorized, but appear to revolve around various issue groups, including: civil rights, mental health, environment, education and technology, as shown in Figure 3.

Because so many interest groups lack paths to other groups in this net-

work, i.e., fail to cosign with other interest groups, the range of values for the centrality measure of closeness is zero. Closeness measures the degree to which a group is close to all other groups in the graph; thus despite collections of tightly grouped networks the overall graph is quite disconnected. This window of cases is surprisingly indicative of the complete network as well. Interest groups continue to sign alone, suggesting that not all interest groups value these networks equally.

Egocentric Networks

While the average node centrality measures tell us a great deal about the structure of the network, we next unpack the highest centrality interest groups and more carefully examine their respective egocentric networks. These are the key players in the network and may lend insight into the practices of successful interest groups. As mentioned above, two common measures of centrality avail themselves to this study. However, these measures (by definition) differed in their selection of the most central interest group. Degree suggests that the NWF was the most central of interest groups. Betweenness suggests that the NACDL was the most central. While the NWF was in the top percentile with either measure, the NACDL was only a central player by measure of betweenness centrality. In typical social science fashion, both measures of centrality are applicable and lend unique insight into how interest groups can successfully use their networks to accomplish their objectives.

Figures 4 and 5 present the egocentric networks of the two central players: NWF and NACDL. It is readily apparent that groups network with others that share issue area interests as well as ideological positions. Thus contrary to networks built on the LDA issue areas or contributions alone, the amici network illustrates links that are based on both issue areas and ideological direction.

As shown in Figure 4, the NWF cosigned amicus briefs link groups like various regional wildlife organizations, conservation organizations and more general non-profit organizations, which may share interests and/or ideology. Particularly interesting and the reason why it is a central player, is that despite various clusters in the network, the NWF cosigns widely. Other groups sign exclusively with a seemingly set network of like-minded organizations, illustrated by the tight star-like clusters, but the NWF appears to have broad interests in cases before the USSC and shares ideological positions with a

host of groups. Thus the NWF serves as a hub to organizations sharing a common interest in the environment.

Contrarily, Figure 5, suggests that the NACDL power stems from their ability to indirectly link a host of seemingly unrelated organizations, which appear to only share a common left-leaning ideology. Particularly interesting and the reason why it is a central player, is that the seemingly broad issue interests in the network would not be linked to each other without the NACDL. The network suggests that the NACDL is a key hub organization for various groups of a common ideological bent.

Like the NWF, The American Civil Liberties Union (ACLU) shows up in the top percentile in both indicators of centrality (see Figures 2 and 3). It should come as no surprise to find the ACLU among those most connected interest groups before the USSC. The less obvious point is that it is also among the most central players in terms of betweenness. The ACLU, with its general scope and pervasive influence before the USSC, links a host of interests that would be unrelated otherwise.

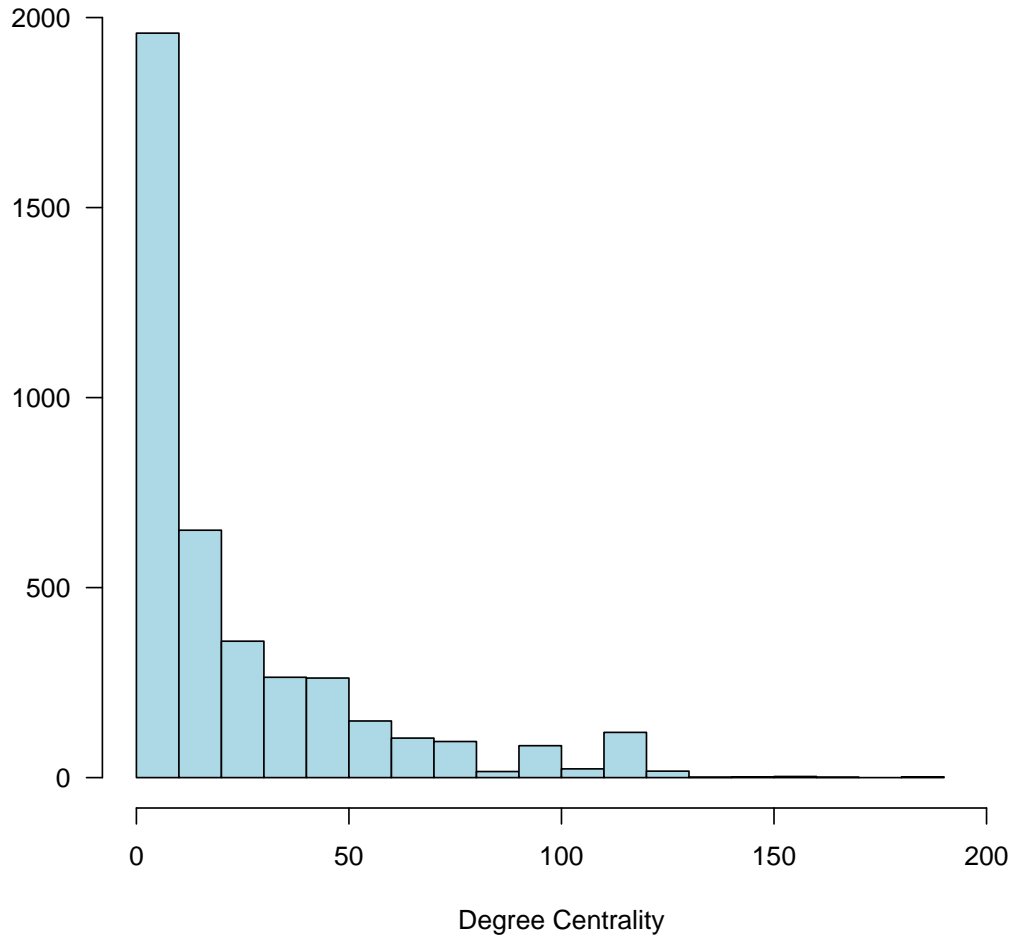
Figure 6 illustrates the ACLU's egocentric network. It exhibits characteristics of both high degree and high betweenness. As such, it looks like a combination of features from the previous NWF and NACDL networks. Much like the NWF, the ACLU reaches out to tightly grouped factions, and much like the NACDL it acts as a central hub for diverse groups with less obvious commonalities. Why these patterns emerge is among the next steps on our research agenda.

Mavericks

An alternative way of thinking about these networks would be to consider the interest groups that do not engage in coalition strategies. While most network analysis is concerned with the key figures, equally important insight can be gleaned by turning network theory on its head. Which groups go at it alone? Which are the mavericks – the islands?

Figure 7 shows that the histogram of degree centrality for the entire period has a strongly positive skew. Thus more organizations play peripheral roles in the network than would be expected of a small world network. In fact, out of the 4,111 organizations appearing at least once in USSC amicus curiae briefs, 446, of the organizations had a degree centrality score of zero. That means that over 10 percent of the observations in the entire period went without a cosigner. Including degree centrality scores up to 11, brings the

Figure 7: Histogram of Degree Centrality



total near 2000, or almost half the population of interest groups.

Olson (1965) maintains that smaller groups have a greater chance of success when the action required is largely spontaneous or the goods are exclusive. Because U.S. Supreme Court cases are not spontaneous, it is unlikely that the speed of the required action is of relevance. However, groups that choose to sign briefs alone may feel that they represent particularistic interests or that the case itself has only exclusive outcomes. Because the costs of submitting a brief are relatively low for an interest group, and the benefits

from bragging rights to their constituents relatively high, regardless of the outcome, some groups may continually submit alone. Certainly, new interest groups may submit a brief in order to gain public attention, which suggests a forward-looking incentive for participation.

Table 3: Percent Lowest Centrality

NODE	2000	2001	2003	2005	2007	2000
CENTRALITY		-02	-04	-06		-07
<i>Degree</i>	12.3	14.2	10.1	16.6	12.3	10.8
<i>Betweenness</i>	68.6	88.2	90.0	87.8	97.0	80.9

Degree and *Betweenness* refer to the percent of interest groups in the lowest quantile for the respective periods.

As shown in Table ??, finding 10 percent of interest groups falling in the lowest quantile for the entire period is not highly unusual. It is, however, lower than the average for the preceding periods. By this account, any single window, apart from 2003 to 2004, overestimates the number of unlinked interest groups relative to the whole. The lower number of interest groups with minimal degree centrality in the summed period suggests the importance of using larger or aggregate windows in the study of interest group networks. Referring again to Figure 1, it is clear that despite the fact that various interest groups may be enveloped into networks with other groups over time, several interest groups continually avoid coalitions. In addition, new groups continually enter the fray with the consideration of new policies in front of the Court and the creation of new groups. Over time, interest groups that may have worked alone on one issue or project often end up working with others, thereby exposing the network. Short windows may not expose these underlying networks; and therefore present incomplete pictures of the network, a point we return to below in our discussion of next steps.

3 Conclusions

We utilized cosigners to United States Supreme Court amicus curiae as indicators of ties between interest groups. As such, this paper presented the first social network analysis of purposive and coordinated interest group relationships. Though largely exploratory, the network structure illuminated

by these interest group linkages provide an abundance of information about the central players and overall formation of the network over the first seven years of the 21st century. In addition, it provides a foundation for subsequent investigations into long-term network development and coordinated interest group activity before various branches of the government.

We found that the factions are tied together by various central players, who act as hubs, leaving a disparate collection of organizations that work alone. While the ACLU, NWF and NACDL all play central roles in the coordinated work of interest groups, they do so in different ways. The NWF, for example, was shown to sign onto briefs with a multitude of signers. Despite being ostensibly focused on wildlife concerns, it held the strongest presence in the seven year period by virtue of the participation of numerous other environmental and wildlife groups. The NWF was directly linked to the largest number of interest groups, involving, at times only marginally, wildlife groups.

The NACDL likewise appeared as a powerful player in the associations of interest groups. It's presence was characterized by a different kind of centrality. The NACDL linked together interest groups that would otherwise be unlinked. In other words, it worked broadly. By signing onto briefs with various groups, it indirectly holds together numerous groups of diverse interests.

The ACLU exhibited signs of both high betweenness and high degree centrality. In other words, like the NWF it signed several briefs with a large number of signatories. And like the NACDL it worked across particular issue areas whenever civil rights were at play; such is expected given the range of civil rights concerns engaged by any one Supreme Court case.

We find that the majority of interest groups primarily partake in coalition strategies with other groups of similar policy interest and ideological character. This is in contrast to previous literature that focused only on one or the other. Some groups, however, have broader interests by definition. Ultimately, our work and data suggest several subsequent questions and opportunities pertaining to the coalition strategies of interest groups.

3.1 Next Steps

While we believe that the mapping and description of the lobbyist network is valuable in its own right, several questions are motivated by the findings above. First, to what extent do mere issue areas determine the linkages be-

tween interest groups? According to the graphs above, ideology also plays a role in the determination of coalitions, however we require additional attribute data and specific models for these and related questions. We are particularly concerned that apolitical organization characteristics also play a role in the development of purposive relationships.

Also of great relevance to our long-term project is the relative impact of networks on the success of interest groups before various governmental bodies. Clearly, interest groups engage one another in the output of various materials and the seeking of various mutual objectives. However, if these networks have little to no impact on the success of the myriad of outcomes, that would suggest little need for network analysis - a highly unanticipated though untested possibility. In addition, we will examine with p^* models which interest group characteristics, such as size, profitability, longevity, and issue focus, play the biggest role in determining whether the network characteristics of interest groups.

Finally, it is clear from the analysis above that certain interest groups played atypical roles in the structure of the network. Large, ambitious and non-policy specific organizations linked clusters of tightly grouped factions together. How then do the interest groups themselves perceive their role in the network? To what extent do different players take advantage of their respective strengths and take note of their respective weaknesses by situating themselves in particular positions within the graph? Such inquiries demand additional information and analyses.

3.2 Bigger Picture

We argue that a coordinated, purposive measure of interest group networks is needed to better understand the multitude of players in our government and their coalition strategies. We believe that the coalitions formed between interest groups that have signed onto the same Supreme Court amicus curiae briefs provides this improved measure.

The project aims to make both theoretical and empirical contributions to the study of political behavior and network analysis. We build on strong theories of network analysis to carefully examine widely acknowledged, but virtually untested claims about the intertwined relationships among interest groups. Furthermore, through the creation of a new network measure applicable to fifty-five years of interest group activity and a data set of interest group characteristics, we provide scholars of interest groups an opportunity

to study the relative impact of coalitions as they engage the governmental process.

The state of our democracy depends on the ability of individuals and organizations to find representation for their respective values in the bodies of government. Organizations, however, do not simply attempt to influence government alone. Instead, as network theories suggest, organizations often collaborate. Combining forces is a time-honored tradition in the pursuit of political ends, and yet we know relatively little about the gamut of networks in our political system and the effect of these networks.

A more complete picture of interest group networks will lead to a fuller understanding of key political players and the behavior of those players, while also addressing the alternative theoretical perspectives on interest groups. While invaluable attempts have been made to understand the network of interest groups across issue area and ideology, purposive network formation on the part of interest groups has largely heretofore escaped the discipline.

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