Participation in Formal and Informal Networks: The Case of the American Legislative Council and Arkansas State Legislators, 2011-2022

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Abstract

Scholars suggest that members of both "hybrid" and citizen legislatures often rely on lobbyists for policy information, especially in emerging policy areas. One such source of policy information is the American Legislative Exchange Council (ALEC), a prominent conservative-oriented organization known for drafting generic bills at gatherings, which legislative members from various states can then introduce in their own jurisdictions. Building upon this prior research, we employ an exponential random graph model (ERGM) using partisanship, geographical location, legislative chamber, overlapping tenures, and gender. The goal of this article is to determine who participates in these voluntary networking opportunities and who does not. Participation in ALEC events is not uniform, even among conservative legislators, though we do find that clustered participation by party among Arkansas legislators, with Democratic participation ending as the two parties became more polarized. More importantly, ALEC participation did foster more networking between colleagues from different regions of the state. We also find that the few women who participate play disproportionately larger roles as central actors in linking these conservative policy networks within ALEC together and focus on one female Arkansas legislator who serves as the bridge between fiscal and business regulation networks within ALEC affiliates.

Introduction

Recent studies have highlighted the value of social network theory in understanding political behavior (Heaney and McClurg, 2009; Carpenter,

Esterling, and Lazer, 2003). Our research builds upon this foundation by examining the network of Arkansas legislators, with a particular focus on multiplexity. We go beyond prior studies that solely focused on legislators' affiliation with the American Legislative Exchange Council (ALEC) to explore the broader range of connections that shape their interactions.[1] This study investigates how network structure, several types of homophily (similarity), and the presence of multiplex ties (overlapping relationships) influence collaboration patterns and sponsorship of legislation.

Multiplexity

Social network analysis has become a valuable tool for understanding the dynamics of power and influence within social structures (Verbrugge, 1979; Heaney and McClurg, 2009; Lazega and Pattison, 1999). More recent studies highlight the need for further research on the evolution of networks and the complex interplay of multiplex ties (McPherson, Smith-Lovin, and Cook, 2001; Shipilov, 2012). This study explores the concept of multiplexity within the network of Arkansas legislators. Multiplexity refers to situations where actors have overlapping ties, such as shared values, professional connections, and personal friendships (Verbrugge, 1979). We examine how these multiplex ties influence collaboration and decision-making among legislators. We hypothesize that multiplex ties can have both positive and negative consequences for legislators. On the one hand, multiplex ties can foster collaboration, trust, and information sharing. On the other hand, these ties may also create conflicting loyalties and hinder legislators' ability to make independent decisions.

Several factors may contribute to network multiplexity developing between members, including the environment in which they interact and social and economic benefits. For example, while workplace connections reflect an element of random selection, additional ties of friendship are often fostered between co-workers due to contact opportunities and preferences (e.g., environmental factors), resulting in greater collaboration, compassion, care, and harmony (Shipilov, 2012; Verbrugge, 1979; Liu et al, 2019; Voelker,

[1] We selected ALEC for two reasons: First, it has influenced public policy in Arkansas by providing draft legislation in a number of areas such as occupational licensing and federalism (American Legislative Exchange Council 2024). As McQuide (2012) concludes, lobbyists are more likely to have influence in states with either "part-time" or hybrid legislatures than their professional counterparts. Second, Andreassona and Rajaha (2022) demonstrate that ALEC encourages legislators to reduce their own policymaking capacity resources so that they rely on ALEC resources, such as conferences, even more

McDowell, and Harris, 2013). Sociodemographic attributes like gender and race may affect the formation of friendship ties, especially within heterophilous structures (Goodreau, Kitts, and Morris, 2009). Social and economic factors, facilitated by commoditized trust (Voelker, McDowell, and Harris, 2013) and shared meaning, are also drivers of multiplex network tie development (Ferriani, Font, and Corrado, 2013).

While multiplex ties offer potential benefits, they can also present challenges for network members, such as increased friction due to conflicting loyalties or competing motives (Basov and Brennecke, 2017; Shipilov, 2012). For instance, an Arkansas legislator might need to vote against a bill sponsored by a friend that is inconsistent with their political party's' platform. The quality and intensity of engagement within these ties can also influence their effectiveness (Verbrugge, 1979; Higgins, Crepalde, and Fernandes, 2021). While maintaining multiplex network ties often yield benefits, the effect can vary for members. Members may experience improved communication, advice-sharing, and collaborative connections resulting from the type and intensity of their engagement within a network (Liu et al., 2019; see also Lazega and Pattison, 1999). Granovetter (1973) suggests that when an actor's connections form a triangle (triad), trust can be assumed between them based on their existing connections (Liu et al., 2019; see also Basov and Brennecke, 2017). They may also experience greater stability due to new connections forming and existing ties strengthening, especially while ascending through their organization (Bliemel, McCarthy, and Maine, 2016). However, the quality and level of these ties are less predictable (Verbrugge, 1979; see Higgins, Crepalde, and Fernandes, 2021 for contrasting view); and additional ties could lead to increased friction within the network structure as members navigate conflicting motives (Shipilov, 2012).

This phenomenon is particularly true for politicians who must negotiate their political ambition and a desire to preserve their network connections. A legislator seeking to maintain the goodwill trust of friendship ties might make different political decisions than one concerned with sustaining competence trust (e.g., determining whether other individuals have the ability to performance necessary tasks) (see Nooteboom, 1996; as cited in Ferriani, Font, and Corrado, 2013). While the social benefits of networks are well-established, legislators influenced by economic incentives (e.g., a state salary, campaign financing, and district funding) may also be inclined to develop or sustain overlapping relationships. Our study examines two distinct networks and offers that, should their objectives

diverge, the Arkansas legislative members are required to manage the complexity and act decisively. This review of the literature highlights the potential for multiplex ties to influence collaboration, trust, and ultimately, political decision-making. Our study will explore these dynamics within the Arkansas legislature, analyzing how multiplex ties interact with factors like homophily and political incentives.

Network Structure

Tie Strength

Beyond the general influence of tie quality, multiplex ties hold particular significance for network members' outcomes. Actors with strong ties are likely to occupy more advantageous network positions (Carpenter, Esterling, and Lazer, 2003). By leveraging these connections, they can maximize their time by reducing the effort needed to transmit and receive valuable information, often acquiring it faster than peripheral actors (Carpenter, Esterling, and Lazer, 2003; Austen-Smith and Wright, 1992; Hansen, 1991). (However, the types of information being dispersed can impact this advantage, as noted by Iribarren and Moro (2011)). This access to resources and information fuels innovation, making influential network members with strong multiplex ties more likely to experience career advancement (Ostoic, 2017).

Multiplex ties, characterized by overlapping connections, can contribute to the enduring nature of networks (Carley, 1991). The strength of these ties within a network can be influenced by environmental factors like homophily and the length of connections (Martin and Yeung, 2006). Liu et al. (2019) argue that continued collaboration is significantly impacted by previous and anticipated interactions. While heterophilous ties (connections between dissimilar actors) may be fragile and short-lived (McPherson, Smith-Lovin, and Cook, 2001) or dissolve due to attrition (Louch, 2000, as cited in Martin and Yeung, 2006; see also Burt, 2000), we propose that Arkansas legislators typically maintain enduring ties within the network even after their terms have ended. The tie persistence likely stems from shared political ideology, ongoing professional interactions, or strong friendships that endure beyond political careers. As a result, the Arkansas legislature exhibits a high degree of network stability despite member turnover, with a structure characterized by few central nodes.

Positionality

Network multiplexity can significantly enhance an actor's ability to leverage network benefits, potentially offering both supportive and instrumental ties (Schaefer, 2011). These supportive ties facilitate the flow of resources within a dense network, while instrumental ties function as bridges between discrete groupings (Schaefer, 2011; see also Higgins, Crepalde, and Fernandes, 2021). Some network members with strong multiplex ties may be privy to information, companionship, and mentoring at a lower cost and with greater frequency compared to those with weaker connections (Schaefer, 2011). Information may eventually reach peripheral network members; however, those in central positions with strong multiplex ties are often first to be involved in the exchange and control the subsequent flow (Schaefer, 2011). For this study's purposes, influence is conceptualized by one's ability to achieve exchange benefits within the network (Simpson et al., 2011b). It is important to note that central actors with strong multiplex ties may not always possess both influence and frequent exchange benefits, as positional advantage can depend on the specific resource type being considered (Schaefer, 2011).

Some network ties, particularly those with overlapping connections, may be invisible to external observers. Humans generally take mental shortcuts, leading them to presume connections exist between network members where they might not (Freeman, 1992 as cited in Simpson et al., 2011a). Misconceptions about network structure and limitations can influence actors' behavior (Schaefer, 2011). Simpson et al.'s (2011) study on the level of network perception for both central and peripheral actors proposed that peripheral actors' view of the network structure may be more accurate (for previous findings, see Simpson and Borch, 2005; Casciaro, 1998; Krackhardt and Kilduff, 1990). This advanced knowledge possessed by peripheral members includes an awareness of how change occurs within the network and who wields influence (Simpson et al., 2011b). Due to their heterophilous connections (connections to dissimilar actors) and advanced knowledge of the structure, peripheral members may also be likely to achieve their career aspirations (Granovetter, 1982; Beggs and Hurlbert, 1997). Conversely, central network members overestimate the collective influence of other prominent members; and, their misconceptions about the network could lead peripheral members to a social trap of prioritizing short-term gains at the expense of long-term advancement (Simpson et al., 2011a). This lack of awareness about the full network structure can have unintended consequences. While increased discernment may help individual outlying members and allow them to strategically engage in more high value

exchanges, rank competition within the network will likely hinder any long-term collective advancement (Simpson et al., 2011b).

Homophily and Heterophily

Homophily (the tendency to connect with similar others) can be a significant factor in the formation of multiplex ties, where connections span multiple domains. Previous studies have noted homophily determines with whom we discuss matters of importance, the friends we select, and mentorship and allyship in the workplace (McPherson, Smith-Lovin, and Cook, 2001; see also Marsden 1987, 1988; Verbrugge, 1977, 1983; Ibarra 1992, 1995). Homophilous engagement, or relationships between those with similar traits, occurs more frequently than heterophilous ties (connections between dissimilar actors) (McPherson, Smith-Lovin, and Cook, 2001; Burt, 2000). These homophilous connections often lead to new relationships that mirror an actor's existing social circles because they offer familiarity, trust, and emotional connection (Voelker, McDowell, and Harris, 2013). Those network members finding themselves in the minority may be more apt to pursue heterophilous relationships (Heaney and McClurg, 2009). Because homophily reflects the distance information must flow between two nodes in network structures, it often results in the localization of culture, behavior, and important news (McPherson, Smith-Lovin, and Cook, 2001). Limiting engagement to those with a shared belief system can reinforce an actor's biases, and multiplex ties that reinforce these homophilous connections can amplify this effect (McPherson, Smith-Lovin, and Cook, 2001; see also Fischer, 1982).

Moving beyond general discussions of homophily, scholars are increasingly recognizing its nuances and proposing typologies to categorize these variations, particularly how they affect the formation and influence of multiplex ties. For example, McPherson et al.'s (2001) study distinguishes between *baseline homophily*, or connections created from initial similarities and attraction, and *inbreeding homophily*, those similarities that are reinforced following sustained engagement (see also Voelker, McDowell, and Harris, 2013). They also leverage Lazarsfeld and Merton's (1954) concepts of *status homophily*, reflecting acquired or constructed traits, and *value homophily*, reflecting the motivations, perspectives, and convictions that drive behavior to further explore homophilous relationships (McPherson, Smith-Lovin, and Cook, 2001). Let us delve deeper into *status homophily* and *value homophily*.

Status Homophily

Status homophily can hinder the development of collaborative relationships within networks, particularly by limiting the potential of multiplex ties to bridge divides between network segments. Central actors in heterophilous relationships may be less likely to serve as a connection point between the segments (Louch, 2000). Low-status actors seeking expertise from high-status actors may struggle to establish a connection that progresses beyond a single communication instance (Liu et al., 2019). In a study on nonprofits, Galaskiewicz (1985) also found that leaders and line workers in uncertain environments were more likely to value network members with higher stature and greater experience than their homophilous professional affiliations. Trust acts as a mechanism for actors to strategically share information, with perceived trustworthiness of others guiding these decisions (Carpenter, Esterling, and Lazer, 2003). Network members have the propensity to affiliate and form ties within the same education, income, and other social classes (McPherson, Smith-Lovin, and Cook, 2001; see also Kalmijn 1998, Hout 1982, Hauser 1982; Marsden, 1987; Verbrugge, 1977; Louch, 2000; Yamaguchi, 1990). This selectivity and social class homophily further reinforce trust-building and influence within network structures, as actors are more likely to trust and be influenced by those they perceive share their status and values (McPherson, Smith-Lovin, and Cook, 2001).

While *status homophily* can limit collaboration, scholars suggest that factors like gender and proximity can moderate these effects by influencing the formation and strength of multiplex ties. Studies have indicated that males who are college educated tend to have more heterophilous networks compared to other actors, who often select confidants with similar educational backgrounds (McPherson, Smith-Lovin, and Cook, 2001; see also Marsden, 1987; Campbell et al., 1986; Campbell, 1988; Fischer, 1982). Fischer and Oliker (1983) found gender behavior linked to both personality and lived experiences (dispositional factors) and network position (structural factors), affecting the number of friendship ties each maintained during different life stages. Except for workplace settings and men's political networks, which tend to exhibit gender homophily (McPherson, Smith-Lovin, and Cook, 2001), adult social networks and workplace ties are typically heterophilous. This suggests that context and network structure play a significant role in shaping homophily patterns. Rates of baseline gender homophily in the workplace is particularly pronounced for men in leadership roles, indicating a propensity to align with other men for mentorship and friendship (McPherson, Smith-Lovin, and Cook, 2001). However, how gender and proximity specifically influence the formation of

multiplex ties, and how these ties in turn moderate collaboration within networks, requires further investigation.

Network density and geographic proximity can influence the formation of multiplex ties by shaping both homophily and the likelihood of cross-group interactions. Network members in "density dependent" environments (Heaney and McClurg, 2009) may be more likely to develop heterophilous ties and friendships if the groups' composition or structure supports it. Because it is so often homogeneous, geographic homophily could also serve as a proxy for relational proximity homophily including familial ties, religion, and race (McPherson, Smith-Lovin, and Cook, 2001; see also Lieberson, 1980; Higgins, Crepalde, and Fernandes, 2021). Geographic and spatial proximity often serve as a natural, low effort precursor to forming friendships and other connections (McPherson, Smith-Lovin, and Cook, 2001; see also Verbrugge, 1977), including where legislators are seated (McPherson, Smith-Lovin, and Cook, 2001; see also Calderia and Patterson, 1987). In addition to affecting the development of crossties, where legislators sit could also influence their propensity to vote along party lines or in a bipartisan manner (Caldeira and Patterson, 1987). Proximity contributes to the "thickness," or quality, of relationships, with those in closer quarters often experiencing higher frequency and multiple ties (McPherson, Smith-Lovin, and Cook, 2001). Gender and proximity can also interact to influence tie development. Women, particularly compared to older men, are more likely to connect with neighbors, fostering multiplex ties that combine geographic proximity with social connections (McPherson, Smith-Lovin, and Cook, 2001; see also Moore, 1990; Fischer and Oliker, 1983; McPherson and Smith-Lovin, 1986; Fischer, 1982).

Values Homophily

While *status homophily* is relatively easy to discern, *value homophily*, particularly in areas like political affiliation, can lead to even stronger connections within multiplex ties. McPherson et al. (2001) found that those with strong political homophily demonstrate more fervent engagement, including joining member-based organizations like ALEC. These organizations foster new, and strengthen existing, network ties beyond workplaces and, due to structural characteristics, male network members are especially likely to capitalize on these multiplex connections (McPherson, Smith-Lovin, and Cook, 2001; see also McPherson and Smith-Lovin, 1982). This membership effect may also drive legislative behavior; researchers have noted similar patterns regarding joint committee members' friendships, perspectives, voting patterns, and sponsorship rates (McPherson, Smith-

Lovin, and Cook, 2001; Caldeira and Patterson, 1987; see also Cook, 2000). In fact, Caldeira and Patterson (1987) noted that committee membership was second only to political party in influencing friendship ties among legislators, with spatial proximity also being a key contributor. McPherson et al. (2001) note that affiliation within member-based entities often fosters greater camaraderie among members, producing *inbred homophily* of more significance than *status homophily*. McPherson et al. (2001) surmised that while *value homophily* could be an even stronger determinant for friendship selection than interpersonal influence, actors often erroneously assume, without evidence, that their friends share their political leanings. Nadel (1957) asserted actors within an organization hold both membership and relational roles that affect their behavior (Brieger, 1974). (However, as we previously noted, an actor's agency and unwillingness to pay the membership tax by following the group's norms may result in defection (Hoskins et al., n.d).) These strengthened multiplex ties can create echo chambers and limit exposure to diverse perspectives, potentially hindering collaboration within networks.

Data and Variables

For this study, we constructed a dataset encompassing 27 Arkansas state legislators. Employing an internet search strategy, we ascertained their co-attendance at American Legislative Exchange Council (ALEC) "events" transpiring during the designated observation window, ranging from 2011 to 2022. Using JavaScript and multidimensional scaling (MDS), we created a valued, undirected squared matrix of bipartite network of politicians (27) and a graphical depiction of their co-participation in ALEC activities. Our analysis revealed significant network party and gender homophily. While data on the legislators' tenure, geographic constituency[2], and chamber service were collected, these variables were ultimately excluded from the previous analysis. Gender and political affiliation were included in the initial SNA; they were reflected by circle/square and blue/red.

[2] Geographic constituency reflects the region (or counties) represented by the Arkansas legislator when they were first elected. For our analysis, we coded the regions "North", "NWA" (for Northwest Arkansas), and "Central." Northwest and Central Arkansas are somewhat overrepresented while legislators from the Delta participate infrequently in ALEC activities. The legislators in this sample are obviously more conservative than the chambers as a whole and are more likely to be Republican. While they are somewhat over-represented of Republican female legislators, they are somewhat underrepresented of female legislators as a whole and unrepresentative of the racial composition of the entire legislature. Since participation in ALEC events is not random, this factor limits the overall generalizability of the study.

Using an exponential random graph model, we include them now as explanatory variables to assess the presence of multiplex ties between the Arkansas legislators.

Methodology

Exponential Random Graph Models (ERGMs) offer researchers a powerful and flexible toolkit for understanding a variety of social networks. These networks include political connections (Fowler et al., 2011; Gaynor, 2022; Heaney, 2014), adolescent friendship patterns (Goodreau, Kitts, and Morris, 2009), cultural aspects of European creative organizations (Basov and Brennecke, 2017), social cohesion and influence within Brazilian slum communities (Higgins, Crepalde, and Fernandes, 2021), and adults learning English as a second language (Gallagher and Robins, 2015). These diverse applications showcase the versatility of ERGMs in analyzing various social network structures. ERGMs allow scholars to move beyond merely describing a social network to inferring the factors influencing its life cycle (Knoke and Yang, 2020).

In addition, ERGMs support the analysis of several network structures, including those with binary, directed, and undirected connections, and can handle large networks, although computational challenges may increase with size (Knoke and Yang, 2020). Rooted in several theoretical principles (see Lusher et al., 2012), the models presume ties are formed through proximate and intentional (e.g., self-organized) reciprocal, transitive, and homophilous interactions; the influence of structural, nodal, and other attributes is reflected in tie formation; structural shifts impact the network's composition; the network's processes are dynamic and constantly moving at once; and, an element of randomness is inherent to the structure (Yang, Keller, and Zheng, 2017).

Furthermore, ERGMs not only permit users to estimate and make statistical inferences about social network relationships, including the presence of reciprocity and homophily (Yang, Keller, and Zheng, 2017), but also overcome the limitations of traditional methods in analyzing the interdependence of ties based on multiple variables and random sampling (Knoke and Yang, 2020). This allows researchers to utilize ERGMs to understand a variable's likelihood to affect the network based on the model's parameters (Knoke and Yang, 2020); explain the formation and transition of ties based on structural, actor, environmental, and temporal factors (Knoke

and Yang, 2020); and illuminate the mechanisms underlying social network connections, including reciprocity and transitivity (Yang, Keller, and Zheng, 2017). ERGMs can even guide researchers to the optimal path by accounting for the total number of reciprocated ties within a network compared to its average (Yang, Keller, and Zheng, 2017). For these reasons, we elected to leverage an ERGM for this study.

Findings

Computationally, an ERGM is essentially a generalized linear model with logit link, i.e., log [P(Yij = 1)/(1-P(Yij = 1))], where i and j stand for two nodes, and Yij = 1 denotes the connection between i and j. We employ this framework to analyze the network of twenty-seven politicians, depicted in Figure 1, revealing the interplay between individual attributes and connection patterns. Notably, the network contains eighty-six connections, resulting in an average density of 24.5% (86 out of 27*26/2 possible connections), suggesting substantial interconnectedness. Using the nominal variables “Party,” “Gender,” Region,” and “Chamber,” we discern the level of homophily (the tendency to connect with similar others) and heterophily (the tendency to connect with different others) present. We use an ordinal variable, "Tenure-Temporal in Office," to represent the number of overlapping peers and to assess whether politicians with more overlapping tenures tend to establish more connections within the network.

An ERGM was fitted using the “ergm” function from the R package “ergm” to explore the network of politician connections. Table 1 summarizes the key findings, with maximum pseudo-likelihood estimates (MPLE) for each variable and their corresponding standard errors and p-values.

The variable “edges” serves as the intercept term in the ERGM, meaning that there is a exp(-2.279)/(1+ exp(-2.279)) = 9.3% chance that two politicians at baseline levels of all variables (that is, Tenure-Temporal in Office are both 0, different party affiliation, different genders, different regions and different chamber categories) are connected. Consistent with existing research, party affiliation exhibits strong homophily, implying politicians from the same party are more likely to connect (with odds ratio exp(2.316) = 10.13, i.e., the odds of same-party connection are

Table 1: Estimated ERGM[3]

Variables	Estimate	Std. Error	p-value
edges	-2.279	1.062	0.032*
Tenure-Temporal in office	-0.043	0.213	0.840
Party	2.316	0.885	0.009*
Gender	-0.558	0.271	0.040*
Region	-0.605	0.267	0.023*
Chamber	-0.420	0.273	0.125

around 10 times the one of different-party connection). Conversely, both gender and region exhibit heterophily: politicians of different genders are more likely to connect (with odds ratio exp(0.558) = 1.75), and politicians from different regions of the state are more likely to connect (with odds ratio exp(0.605) = 1.83).

Analysis

Our study examines how the homophilous, multiplex ties of members in a political network could affect their decision to network outside the official legislative session with other legislators. To test this theory, we leverage an exponential random graph model (ERGM) to analyze the multiplex connections of policymakers serving in Arkansas' "hybrid" legislature between 2011-2022 while engaged with the prominent, conservative-oriented entity, ALEC. These ties include political party, geographical location, chamber of service, overlapping tenures, and gender. By analyzing these multiplex relationships through the ERGM framework, we aim to understand how such connections are formed within the legislator network and how they might influence policymaking within the ALEC-affiliated group.

While individual legislator positions within the network may exhibit some randomness, our ERGM analysis focuses on identifying statistically

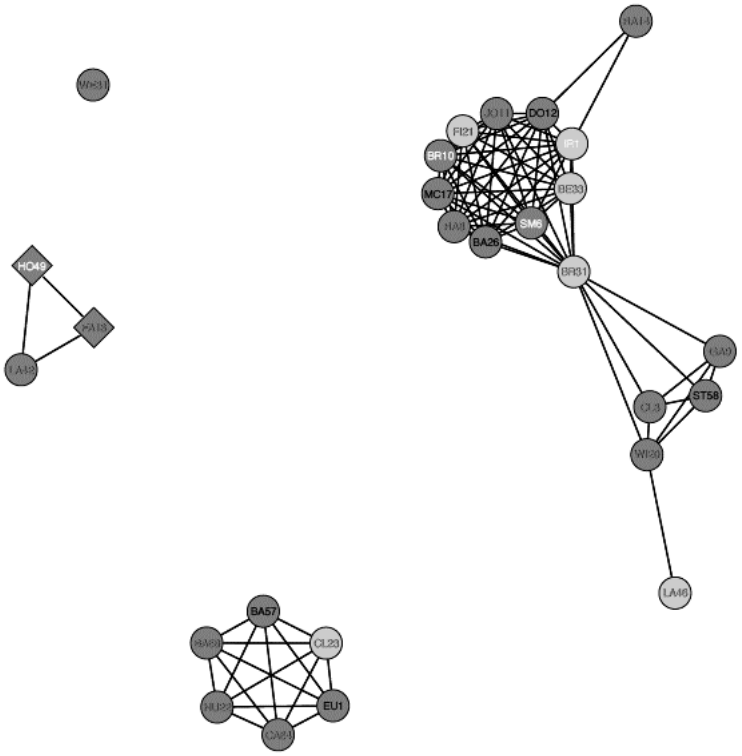
[3] A "*" denotes statistical significance at the level of 0.05.

significant patterns of connection based on multiplex ties. Our prior analysis identified significant partisan and gender homophily within the network of Arkansas legislators. The EGRM results support this observation, highlighting the strong influence of political parties in driving homophilous connections. Belden (2005) also found evidence of homophily within the Arkansas legislature, particularly along party lines, during a period of Democrat dominance in the early 2000s. In comparison to Belden's study, our findings denote a partisan shift in the Arkansas legislative network. While the two Democrats in our sample population previously held influential roles within the network, during our observation period the network was heavily skewed towards Republicans, indicating a measure of shared values, or *values homophily,* between the policymakers. These results are clear in Figure 1.

These findings affirm McPherson et al.'s (2001) observation that strong political ties may lead to higher in-group engagement, extending to membership in organizations like ALEC, and fostering great camaraderie between members.

Interestingly, despite having 21 male members and strong gender homophily, the network, as shown in Figure 1, also exhibits significant heterophilous ties with three female legislators standing out as key actors: BR31 occupies a structural hole bridging two distinct gender heterophilous groups of legislators; CL23 is the sole female in a closely clustered group of male colleagues; and, LA46 is a peripheral network member tied to a small group of male legislators. Several factors could have contributed to this network structure, including the shared values we previously discussed, which could encompass both political and non-political common ground. While this finding aligns with existing research indicating friendship ties are likely to develop between genders and minority members in heterophilous structures (Goodreau, Kitts, and Morris, 2009; Hearney and McClurg, 2009), it is a stark contrast to Belden's (2005) study of the Arkansas legislature where study participants viewed the legislature as male dominant with no female leaders.

Figure 1:



Network visualization, where each node represents a politician (square – Democratic, circle – Republicans; lighter gray field– female, darker gray – male; white letters – North Arkansas, darker letters Northwest or Central Arkansas), and a tie indicates that two politicians had co-participated in some event(s).

Beyond these observations of gender and partisan homophily, we examined additional legislator attributes including region of representation, chamber of service, and shared tenure. Ties are likely to develop between neighbors, co-workers sitting in close proximity, legislators on the same committees, and those from the same social class (Shipilov, 2012; Verbrugge, 1977, 1979; Liu et al., 2019; Voelker, 2013; McPherson et al.; Hout, 1982; Hauser, 1982; Marsden, 1987; Louch, 2000; Yamaguchi, 1990). Our model used the region represented by the legislator as a proxy for geographic proximity. For example, legislators BR31, CL23, and LA46, all from Central Arkansas, likely connected due to this regional influence. Interestingly, despite the first network member (HO49) being from the North region (which had four members representing, or 14.8% of the population), this group primarily formed ties with legislators from the Central and NWA regions. This pattern suggests *status homophily* (which we previously noted were traits acquired or developed by the network members), as the Central and NWA regions share similarities in demographics and economic characteristics. Belden (2005) also considered the geographical differences in Arkansas, noting that NW Arkansas (and a small portion of Central Arkansas) was viewed by policymakers as affluential and elite in comparison to other parts of the state.

Our ERGM results did not reveal a strong association between legislators forming connections solely based on serving in the same chamber or during the same timeframe. Several factors might explain this, including personality or ideological differences, limited opportunities to interact due to lack of proximity, the influence of past negative interactions and the anticipation of future conflict, and the demanding workload of legislators. Further research is needed to explore these possibilities in greater detail.

Understanding the Significance of BR31's Network Position

Scholars have argued that an individual with both BR31's status homophily (e.g., tenured elected official with deep political and geographic ties) and values homophily (e.g., conservative Republican and ALEC affiliate) would be positioned to exert considerable influence on policy decisions and situate her to become a key opinion leader within the network structure. BR 31's role shouldn't be a surprise though considering she serves in prominent roles in both the Revenue and Taxation Committee as well as the Insurance and Commerce Committee. Much of this research has followed Kingdon's (1973) example and focused on the verbal and nonverbal cues of policymakers intended to affect their legislative peers' behavior, and

we think that her presence both in formal legislative positions and informal ALEC ones are likely to magnify her influence in this capacity.

In one study, Ray (1982) compared roll call voting data from the House chambers of three Eastern states – Massachusetts, New Hampshire, and Pennsylvania – to determine which legislators' votes were most influential. These states were chosen for their varying levels of legislative professionalism, determined by factors such as low membership turnover, standalone offices, access to professional staff, and more. The study also considered "congressional voting cues," which included both intentional and unintentional efforts by legislators to convey their preferences, such as committee reports and recommendations on proposed bills. The findings showed that legislatures behaved differently based on their level of professionalism. More professional legislatures were influenced by party leadership, fellow legislators like BR31, interest groups, and constituents. In contrast, less professional legislatures were swayed by constituents, interest groups, and committee reports and recommendations.

In their study of California's legislature, Sabatier and Whiteman (1985) compared the fit of Porter's (1974) two-stage model for assessing legislative decisions to their own three-stage model. They argued for a broader approach than just voting data, highlighting the role of legislative experts, often committee chairs or tenured policymakers, who set the agenda and craft policy options with input from others. Sabatier and Whiteman further categorized the information legislators receive into two types: "political information" concerning public sentiment and its influence, and "policy information" regarding the legislative content, its causes, and potential effects. They acknowledged that these categories can sometimes overlap. The results of both models demonstrated that non-specialist legislators were positioned to receive filtered, potentially biased information, while specialist legislators like BR31 directly influenced their voting choices by providing policy knowledge and insights, including the policy and political information they had gathered from other sources.

Mooney (1991) examined Wisconsin legislators' consumption of written materials related to 17 policy proposals. His study found that fellow legislators and interest groups were the most influential sources of information for legislators. Mooney argued that legislators' focus on specific written materials indicated a higher level of interest in a particular policy proposal, leading them to develop a deeper understanding of the issue. Handwritten notes and memos from colleagues were the most frequently

consumed source, followed by materials from executive agencies and interest groups. Proximate (or homophilous) traits related to work and other experiences appear to have increased the legislators' receptiveness to information from their peers and relevant stakeholders, suggesting these traits provide information bearers like BR31 with "insider information" or a "facilitation mechanism" for message conveyance. Further, the risk of receiving biased information from these expert legislators may not be a deterrent for those legislative peers seeking information. While this study examined the use of written information, Mooney predicted that oral communication would likely affirm findings about the influence of status homophily on legislators.

According to Belden's (2005) findings, a policymaker like BR31 would be in a key position to set the agenda and influence her legislative connections to vote in a way that aligns with her policy objectives, objectives that could reflect ancillary engagement (e.g., ALEC network ties). Her central position should provide her with the necessary and advantageous insight to facilitate this communication. Being viewed as a credible (or trustworthy) source of useful, relevant, and easily understandable policy and political information because of access to experts within her network would effectively render the policymaker an "expert" who fills a critical need held by her fellow legislators. Her position as an expert would be further solidified if she elects to sponsor legislation that reflects this information, she has achieved seniority, or she holds a leadership or membership role on a related committee. Belden notes that, while this information could be available through state regulatory agencies, the political environment may discourage legislators from pursuing that avenue, despite the potential for bias in external information.

In a more recent, longitudinal study of legislative influence, Wilson (2022) examined co-sponsorship patterns in seven states: Alaska, Illinois, Indiana, Minnesota, Nebraska, Oklahoma, and South Carolina. The study builds on Dahl's 1957 theory (and other political science studies) that network members influence each other's actions by exerting power. Wilson acknowledges that 1) these ties can be influenced by multiple sources simultaneously and 2) legislators can act as both cue givers and receivers. She categorized legislative decision-making as either directional (influenced by party or ideological similarity) or spatial (influenced by values similarity). The study found a lower level of cue giving occurs in less professional legislatures, affirmed majority parties generally possessed more influence, and found female legislators wielded a significant amount of influence,

especially with Democrats. The cues from ideological extremists were found to be significantly more influential than moderates in ideologically heterogeneous legislatures. Also, legislative leadership was not found to be as influential as ideological extremists, especially among conservative Republicans, possibly due to a history of collaboration among these legislators, committee chairs, and those serving on shared committees. Political elites, like BR31, may benefit in this environment by having a higher level of expertise that results in them making the right calls, establishing themselves as a resource for other legislators to follow. In this regard, committee membership likely serves as a primary avenue for legislators like BR31 to wield influence, especially those who do not hold a significant amount of committee chairmanships during their tenure.

Shifting Power Dynamics in Arkansas Politics

Building upon the observation of BR31's influential position within the network, this section integrates the historical perspectives of Blair and Barth (2005), Belden (2005), and Davis (2024) to examine the broader shift in power dynamics within Arkansas politics. As previously discussed, BR31's potential advantage may be attributed to factors such as party affiliation, engagement with the American Legislative Exchange Council (ALEC), and regional ties. Historically, the Democratic Party maintained a dominant position in Arkansas since statehood. However, the early 2000s marked a significant rise of the Republican Party. In 2004, Democrats controlled over 70% of the legislative seats. By 2021, this balance had reversed, with Republicans holding more than 70% of the legislature. This dramatic shift had a profound impact on the state's political landscape, potentially fostering an environment where elites within the Republican Party increasingly control the legislative agenda.

While some might perceive this change as sudden, a closer examination reveals several underlying forces that facilitated this transition, including Winthrop Rockefeller's investments, the progressive ambitions of the Big Three (i.e., Dale Bumpers, Bill Clinton, and David Pryor), and the state's traditionalistic political culture. Rockefeller's strategic investments and political efforts laid the groundwork for Republican growth, while the Big Three's progressive policies and national prominence redefined the Democratic Party's influence (see Blair and Barth, 2005). Additionally, Arkansas's traditionalistic political culture, characterized by a preference for established hierarchies and resistance to rapid change, created fertile ground for these shifts in power dynamics. This nuanced understanding underscores

the complexity of Arkansas's political evolution and the interplay of historical and contemporary factors shaping its current landscape.

In the wake of continued investment in the GOP state party over the last two decades (Davis, 2024) and the vacuum created by the retirement of Barth and Blair's Big Three, a stronger, more organized Republican Party emerged in Arkansas. The newly empowered Arkansas Republicans developed a clear message that aligned with the national platform and resonated with Arkansas voters, resulting in widespread electoral success. However, the era of moderate conservatives like Winthrop Rockefeller also gave way to more ideologically conservative politicians on the right, particularly those whose political aspirations mirrored the Big Three. Aided in part by term limits in the state legislature, these Arkansas Republicans have increasingly been able to achieve their progressive ambitions at a higher rate than their Democratic counterparts by leveraging national network connections like ALEC. Given the reduced time to forge bonds through seniority and the brevity of the legislative sessions, it seems likely that any additional opportunity to network with other legislators is likely to deepen those ties and making advancing policy initiatives more likely as well.

While it may seem unlikely that the two Democratic members of our population served as national chairs of ALEC, it is important to note that the Democratic Party in Arkansas was ideologically conservative until the late 1970s. Further, the current class of elites is largely bound by their racial, gender, religious, and geographic homophilous traits (e.g., white, male, and Christian from Central and Northwest Arkansas), although some with the same *values homophily* and *status homophily* have also been afforded membership.

While our model does not show chamber or tenure as statistically significant factors, they might still influence connection formation. Shared experiences and proximity within the legislature due to chamber and tenure overlap could contribute to friendships and strengthen ties. At first glance, the findings may seem unsurprising. After all, wouldn't Republicans socialize together? However, our findings do show that wasn't always the case and that Democratic legislators once participated in ALEC activities as well. However, over time, as the two parties polarized over the course of the last 15 years, that dual participation ceased. Furthermore, ALEC gives Republican state legislators, who only meet for 90 days in a regular two-year session, additional time to discuss and plan policy with colleagues from

different parts of the state. Given the brevity and level of activity in those sessions, it seems likely that these extended interactions will have a significant effect, especially in the narrow policy areas targeted by the ALEC sessions.

Conclusion

This study builds on the understanding that state legislators often rely on supplemental information from, and significant engagement with, knowledgeable external networks like ALEC. However, while ALEC engagement may lead legislators to coordinate and collaborate more frequently to diffuse its policy ideas, our interest was piqued by the concept of multiplexity, the presence of overlapping connections within a network. By examining legislator attributes beyond ALEC participation and influence, we aimed to understand the factors shaping connections within the Arkansas legislature. We employed an exponential random graph model (ERGM) to analyze how legislator characteristics like partisanship, geography, and shared experiences influence network formation. Importantly, we explored how these factors contribute to multiplex ties, potentially fostering collaboration and impacting legislative behavior. This research highlights the value of social network models and political science theory to understand legislator interactions and the complex web of influences on policymaking. By also examining multiplexity, we shed light on the nuanced factors driving legislator connections and the potential impact of both internal and external networks.

The next goal, after discovering what ties exist, is then to determine how these ties affect public policy outcomes by utilizing the results of this study to offer explanations for legislators' sponsorship behavior and by analyzing these multiplex ties, including factors like friendship and geographical proximity.

Although not directly shown in our initial network visualization, the combined effect of these homophilous and heterophilous connections would likely result in a dense network. This network's density could be further amplified by multiplexity, where legislators have overlapping connections beyond just ALEC participation (e.g., friendships, shared legislative committees and chambers, and workplace and geographic proximity). By better understanding the depth to these ties, we hope that future research will boost our knowledge of how they influence policy outcomes.

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