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# Electoral Institutions and Legislative Behavior: The Effects of Primary Processes

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## Abstract

Electoral institutions can affect the voting behavior of legislators who are elected through those institutions. In this article, the authors apply social network theory to study patterns of legislative choices under different primary election systems, and this approach leads the authors to study how electoral institutions affect legislative behavior differently than most previous research—that is, they focus on how electoral institutions affect the interactions between legislators. The authors use data on legislative voting behavior from the California State Assembly and exploit the changes that have been implemented in California's primary elections process over the past two decades. Specifically, they hypothesize that legislators who were elected during the years in which a nonpartisan blanket primary was used in California (1998 and 2000) will be more centrally networked and more likely to compromise with other legislators. They find evidence to support their hypothesis: legislators elected under the nonpartisan blanket primary are more likely to agree with other legislators. Electoral institutions, especially primary elections, have important effects on legislative behavior. The authors' results have implications for highly polarized state legislatures.

## Keywords

primary election, social networks, California state assembly

It has become almost a truism in the study of legislative behavior that “institutions” of any deliberative body serve to constrain the space of possible outcomes and thereby shape the behavior of legislators (e.g., Shepsle 1979). While much of the research in this area has focused on “institutions” internal to the deliberative body itself—for example, legislative committees—there has not been as much analysis of how institutions that are more exogenous to the legislative process also help determine legislative behavior.

The American founding fathers recognized the importance of largely exogenous institutions on legislative behavior, in particular those institutions that are used to elect legislators to office. For example, Madison (1787, Retrieved from <http://www.foundingfathers.info/federalistpapers/fed15.htm>) wrote in Federalist 51 that different methods of election were critical components in maintaining checks on legislative authority: “In republican government, the legislative authority necessarily predominates. The remedy for this inconvenience is to divide the legislature into different branches; and to render them, by different modes of election and different principles of action, as little connected with each other as the nature of their common functions and common dependence on the

society will admit.” These early political theorists recognized the important role that electoral institutions play in shaping legislative behavior.

In this article we study how one electoral institution (primary elections) might shape legislative behavior. While primary elections might have not been envisioned by political theorists like Madison, in today's era of partisan politics primary elections play a very important role in determining who is elected to legislative offices. While researchers debate the causes (arguing about the relative impacts of incumbency advantages, campaign finance, and district gerrymandering, to name but a few of the suspects), those same researchers seem to agree that at both federal and state levels, legislative general elections have grown significantly less competitive in recent decades (Weber, Tucker, and Brace 1991; Abramowitz, Alexander, and Gunning 2006). The locus of competition in

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legislative elections has shifted from the general election to the primary elections, which is one important reason for our focus on the potential of primary elections to influence legislative behavior. For example, in the three election cycles before 2008 in California, the state we study in this article, only 4 of 495 legislative and congressional races had seats that changed parties (Skelton 2008).

Specifically, we study whether legislators elected during the years in which a nonpartisan blanket primary was used (1998 and 2000) demonstrate different legislative behavior relative to those elected in years when other primary election institutions were in effect. We find some evidence that legislators elected under the blanket primary are more likely to agree and compromise with other legislators. Consistent with this result, we have weak evidence that legislators first elected under a blanket primary system wield a statistically significantly larger amount of legislative power than their peers elected in different years; Individuals who were elected in a blanket primary year, and are members of the majority party, have slightly more legislative power. The average rate of agreement between legislators' roll call votes during the legislative sessions immediately following the blanket primary is much higher, and this pattern is true within members of the same party as well.

This article proceeds with a discussion of the existing studies regarding primary elections. We discuss our theoretical perspective on legislators, which is drawn from recent studies that use social network theory to examine legislative behavior. Then we present our hypotheses about how the nonpartisan blanket primary should alter legislative networks, followed by a discussion of how we plan to test our hypotheses using data from the California State Assembly. The remainder of the article compares blanket primary legislative sessions to closed primary legislative sessions as well as within blanket primary sessions where we compare those legislators newly elected under the blanket primary to those legislators elected under the closed primary system. We conclude with a discussion of the implication of these results for a highly polarized state legislature, like California's.

## Primary Elections and Political Behavior

Despite their importance in the American electoral process, there has not been as much research focused on primary elections as there has been on general elections.<sup>1</sup> This is particularly true when we look for previous research on the effects of different types of primary processes and their potential effects on voter, candidate, and legislative behavior. As primary elections have become increasingly prominent in the American electoral process, there have been a variety of different types of pri-

mary processes used. As far as voting behavior is concerned, the most important procedural issue regarding primaries is the extent to which voters can determine the set of candidates for whom they can cast ballots. At one extreme there are completely "closed" primary processes, in which voters are constrained to participate only in the primary of one party, and thus can cast ballots for candidates only from that one party. The other extreme are completely "open" primary processes, including a variety of different primary systems in which voters can select candidates regardless of both the voters' and the candidates' party affiliations. And of course there are primary processes that are mixtures of both closed and open systems—an example being California's current system where the primary elections are closed for those who register for a political party but where in certain circumstances those who are registered as partisan independents can participate in some party primaries.<sup>2</sup>

Not surprisingly, these different primary processes have spawned some research that seeks to determine the degree to which voters "cross over" to vote in other party primaries when they have the ability to do so and what motivates them to cross over (Abramowitz, McGlennon, and Rapoport 1981; Jewell 1984; Ranney 1975; Adamany 1976; Hedlund, Watts, and Hedge 1982; Hedlund and Watts 1986; Weckin 1988, 1991; Southwell 1991; Alvarez and Nagler 1999, 2002; Sides, Cohen, and Citrin 2002). This literature finds that voters do cross over when they have the opportunity to do so, though in general it seems that the decision to cross over in primary elections is largely motivated by sincere and not sophisticated motivations.<sup>24</sup>

Regardless of voter motivations, to the extent that the method used to nominate general election candidates alters both the set of candidates who seek nomination and the strategies they use when they seek nomination, then we would anticipate that once in office the legislators would behave differently. For example, if a more open primary process induces potential candidates who are more ideologically moderate or more compromise oriented to seek office, then we would expect that subsequent legislative behavior might appear more ideologically moderate or compromise oriented. Generally speaking, the extant literature on the effects of primary elections has taken two approaches, both looking primarily at how primary processes affect candidate and legislative ideological positions. These approaches have found significant support for candidates strategically responding to an open primary process by becoming more moderate and potentially more likely to agree with other legislators.

First, there has been some work that examines how primary election processes affect the policy locations of the set of eligible candidates. Numerous articles have provided theoretical models of the primary system as a multistage institution that affects candidate positions

(Coleman 1971, 1972; Aranson and Ordeshook 1972; Wittman 1977, 1983, 1991; Aldrich 1983; Aldrich and McGinnis 1989). Candidate platform positions are affected by whether or not they have had to compete in a “tough primary” (Ansolabehere, Snyder, and Stewart 2001; Meirowitz 2005; Brady, Han, and Pope 2007). Candidates strategically locate their platform positions based on the distribution of voter preferences in both the primary and general elections. Ultimately, these studies also imply that candidates running within the context of a more open primary institution ought to exhibit more ideologically moderate policy positions than candidates who seek nomination in a closed primary system.

Second, there has been some work that examines how primary election processes affect the representation of the electorate. Kaufmann, Gimpel, and Hoffman (2003) argue that open primaries will result in more moderate winners. They rely on state-level exit poll data from 1988 to 2000, where in 113 primary contests they compare the ideologies of voters under open and closed primary systems to voters in the general election. They find that open primary voters are more ideologically similar to voters in general elections than closed primary voters and find significant levels of crossover voting with open primaries. Empirical estimates of the impact of open primaries on representation typically find that open primary systems generate representation closer to the preferences of the median voter (Geer 1986; Norrander 1989; Kanthak and Morton 2003). Gerber and Morton (1998) argue that with an open primary system, the congressional candidate who wins office will more closely represent the district median voter.<sup>3</sup> However, more recently McGhee et al. (2010) studied the possible linkage between state primary electoral systems and state legislator ideologies and found little evidence for any association between the two.

In our study, we take a different approach. We use social network theory to understand how primary institutions influence networks within a legislature. Like other scholars who have recently studied legislative behavior from this perspective, we see the California legislature as a social network, and accordingly we study the effect of electoral institutions on behavior in this social network (Porter et al. 2005; Fowler 2006a, 2006b; Victor and Ringe 2009; Tam Cho and Fowler 2010). We hypothesize both that electoral institutions will influence the behavior of candidates who successfully compete in those same electoral institutions and that we will see different legislative behavior from representatives who have been elected under certain election institutions as compared to representatives who were elected with different institutions. Thus, rather than looking for how electoral institutions might affect the ideological or partisan profile of a legislature, we instead look for how electoral institutions

will influence the behavior of elected representatives within the legislative social network.

Specifically, based on the previous research discussed above, we test two hypotheses about how primary electoral institutions affect legislative behavior. Our first hypothesis is derived from recent research that conceptualizes legislative behavior in terms of social networks (e.g., Porter et al. 2005; Fowler 2006a, 2006b, 2009; Tam Cho and Fowler 2010). Because a nonpartisan blanket primary is likely to favor moderates—candidates who can make connections with voters outside of the candidate’s own political party for either personal or ideological reasons—we hypothesize that the attributes of moderates will be transferred to legislative behavior. Moderate candidates will use those same skills to connect with other legislators who might be otherwise outside of the typical partisan network, even after controlling for ideology. Thus, we expect that legislators elected during the nonpartisan blanket primary years will be more centrally connected in the legislature than those who were elected under less open primary procedures. Our second hypothesis is related but focuses on legislative agreement (e.g., Masket 2008, 2009). We expect that legislators who were elected during the period of the nonpartisan blanket primary will have higher rates of legislative agreement, as again they will have attributes, such as ideology, and skills favored by the nonpartisan blanket primary that they will use to their advantage in their legislative activities (the ability to connect with members of other parties and ideologies). Thus, our hypotheses are similar to those of Masket (2007), who finds that when California allowed cross-filing in its primaries (when candidates of other parties could appear on the ballot without their party labels known), legislative partisanship all but vanished.<sup>25</sup>

In the next section, we discuss our data and method. We then present our results and show that primary election institutions affect subsequent legislative behavior.

## Data and Method

Elections for the California State Assembly are held every two years, when each of the eighty representatives stands for election at the same time. We use roll call data from each floor vote from the California State Assembly 1991–2006, representing eight legislative sessions.<sup>4</sup> We include all floor votes except those where there was unanimous consent. There are small variations in the number of representatives in each legislative session because of deaths and retirements, but the number of representatives is roughly eighty per term.

We consider the roll call data for each legislative session as representing a matrix of agreement that can be

**Table 1.** Summary of Data by Legislative Session

Year	Total bills	Total leg	Abstain	Total aye	Total nay
1991–92	3,614	84	42,058	189,142	68,762
1993–94	4,248	83	22,701	108,531	38,835
1995–96	3,485	84	27,730	101,242	35,438
1997–98	3,404	81	16,921	121,870	14,524
<b>1999–2000</b>	<b>3,596</b>	<b>80</b>	<b>12,062</b>	<b>12,485</b>	<b>30,733</b>
<b>2001–2</b>	<b>3,229</b>	<b>81</b>	<b>9,945</b>	<b>84,531</b>	<b>24,324</b>
2003–4	2,637	80	5,678	75,216	24,546
2005–6	2,975	81	7,398	85,680	31,176

Blanket primary sessions are in bold, 1998 and 2000.

used to describe both ideological similarity and social connections between legislators. We do not observe an explicit social network but rather an implied network that is the outcome of a particular set of ideologies, strategic interactions, and cue-taking behavior. Each roll call matrix consists of each legislator's vote on each bill where a vote can be either *yea*, *nay*, or *abstain*. We generate an implicit network by counting, for each individual  $i$  and  $j$ , the number of instances where  $i$  and  $j$  have voted the same on a particular bill. This produces an adjacency matrix,  $A$ , where each entry  $\alpha_{ij}$  in the matrix describes the number of times  $i$  and  $j$  have voted similarly for all legislators  $i$  and  $j$ . Each entry,  $\alpha_{ij}$ , can be thought to represent the network proximity between legislators  $i$  and  $j$ . This representation is an improvement on the existing literature in that it captures the instances where  $i$  and  $j$  may both abstain, and the estimates based on these data make minimal assumptions about legislative behavior. We calculate, via  $\alpha_{ij}$ , the realized behavioral proximity between  $i$  and  $j$  through the frequency of agreement between legislator  $i$  and  $j$ . There are many underlying utility models that could generate these agreement rates, and for now we remain agnostic as to the particular model that generates agreement.

We utilize the agreement data to capture trends about the behavior of legislators before, during and after the implementation of the blanket primary system, which applied to California primary elections in 1998 and 2000.<sup>5</sup> We focus on legislative voting behavior, in particular changes in the amount of disagreement among legislators, and on the type of legislators who make up the voting “leaders.”

For each legislative session, we collect data on party identification, committee membership, leadership position, and tenure in office for all Assembly members. We record membership in seven total standing committees, which include Judiciary, Revenue and Tax, Agriculture, Labor, Rules, Education, and Ways and Means. We record which legislators hold five leadership positions, which include speaker, speaker pro tempore, majority floor leader, minority floor leader, and assistant speaker pro

tempore. We also record the total number of years each legislator has served.

We anticipate that there may be effects on legislative behavior that are attributable to redistricting. California underwent a series of fairly severe redistricting efforts in 1982, 1983, 1992, and 2002. To control for the effects of redistricting on voting behavior, we collected partisan registration data for each Assembly district. Here we anticipate that districts that became more partisan are likely to elect representatives who are more partisan—or potentially encourage their currently elected representative to vote in a more partisan manner.<sup>6</sup>

We present our roll call data in Table 1. The first column describes the total number of bills voted on in each session. The next column indicates the total number of legislators considered in our analysis. Again, we have small variations around eighty because of deaths and retirements, where legislators are replaced midsession via special election. We also tabulate the total number of yea, nay, and abstain votes cast in each of these legislative sessions. These decisions, cast on all nonunanimous roll call votes, form the basis of our analysis. We present a technique in the next section that allows us to look beyond the average likelihood of agreement between any two legislators to a measure of legislative power, based on a social network definition of influence, called centrality.

## Primary Elections and Legislator Centrality

Scholars who study social networks have developed a number of tools to describe the relationships that exist between individuals. There are two key distinctions in the description of networks—some networks are described by explicit and institutional social relationships, such as records of marriages (Padgett and Ansell 1993). Other networks are described by implicit social ties—records of common or shared behaviors such as voting patterns (Fowler 2006a, 2006b). Legislative voting data will follow this second trend, where individuals are considered to



be “linked” to each other in a social network by their common voting decisions. That is, each legislator is connected to each other legislator if they have voted similarly on the same bill. The total number of bills on which both legislators have agreed represents the strength of their social network tie. Repeating this calculation for all legislators establishes an implicit network.

Focusing on patterns of agreement scores from an implicit network requires the assumption that legislators are influenced by each other. Fortunately, there is significant evidence that they are. An extensive literature exists showing that legislators take cues from legislative leaders and committee chairs, as well as from those with whom the legislators cosponsor bills and share caucus membership and those they sit near (Kingdon 1973; Matthews and Stimson 1975; Koger 2003; Fowler 2006a, 2006b; Masket 2008; Victor and Ringe 2008). Legislators form friendships based on their legislative roles, common committee service, shared partisanship, and shared ideology (Caldeira and Patterson 1987). Recall that each legislator is connected to each other legislator if they have both voted on the same bill. The more frequently the pair of legislators vote together, the stronger their connection. That is, suppose two legislators both voted similarly on eight bills out of a possible twenty. The strength of their network tie would then be 8/20. Some of the earliest analysis on legislative connections defined the strength of the relationship based on the agreement score (Rice 1927; Truman 1959), and more recent work has adopted this early definition (Masket 2008, 2009).

Based on the agreement network, it is possible to establish each legislator’s *centrality* in the voting network. Centrality is a measurement of the relative importance of each legislator within the network: the legislator who, both indirectly and directly, generates voting agreement. This agreement could be driven by ideological similarity or personal relationships or both. By determining the centrality of each individual we can determine which sets of individuals are the most influential for other legislators’ voting decisions. Centrality is a concept derived from graph theory, which describes the most “important” node in a graph. Each individual in the graph is represented by a node; connections between individuals—here, voting in concert with another individual—are represented by an undirected link. An individual’s importance, then, is calculated as a function of these links in the context of the graph.<sup>7</sup>

In this analysis, we use Bonacich power centrality (Bonacich 1987), similar to *alpha centrality* (Bonacich and Lloyd 2001).<sup>8</sup> Bonacich power centrality is a particularly appealing definition for our purposes for three reasons. First, it assigns each individual within the network some small initial importance. Without the assumption

that each individual begins with an initial importance, it is possible that an individual who had no one with whom he or she voted similarly would then be assigned zero importance. The second feature of this definition of centrality that is appealing is that it assigns centrality values to each individual based on the principle that connections, even indirect connections, to more highly connected individuals should carry more weight than connections to lower connected individuals. In terms of evaluating legislative connectivity, the intuition is that a legislator is assigned a high value if he or she votes similarly with a large number of other legislators and that this legislator’s value should be made even larger still if the individuals he or she votes with are also highly connected. Thus, the most central legislator could be thought of as being representative of the chamber—he or she is the legislator with whom the most legislators agree, and with whom similarly central legislators agree.<sup>9</sup> Finally, this centrality measure can be normalized across legislative sessions as the total amount of influence is fixed for each legislative session.

Let  $N$  represent the number of legislators within a particular session and let  $A$  be an  $n \times n$  adjacency matrix, where each value  $a_{ij}$  describes the intensity of the relationship between individuals  $i$  and  $j$ . For any given pair of legislators,  $i$  and  $j$ , the value  $a_{ij}$  is the number of times that legislator  $i$  has cast the same vote (yea, nay, abstain) as legislator  $j$  in that particular legislative session.

Given the adjacency (or agreement) matrix,  $A$ , presented above, the vector of centrality measures,  $c(\alpha, \beta)$ , is defined as,

$$c(\alpha, \beta) = \alpha(I - \beta A)^{-1} A \mathbf{1},$$

for  $i = 1, \dots, N$  legislators;  $I$  is an  $n \times n$  identity matrix,  $\alpha$  is a scalar,  $\beta$  is an  $n \times 1$  vector of initial individual weights, and  $\mathbf{1}$  is an  $n \times 1$  vector of ones (Bonacich 1987; Bonacich and Lloyd 2001).

The scalar  $\alpha$  is chosen such that  $\sum_{i=1}^N c_i(\alpha, \beta)^2 = N$ .

The scale factor  $\beta$  is chosen to be “appropriately small.”<sup>10</sup> Here,  $\beta = \frac{1}{(1 + \lambda_1)}$ , where  $\lambda_1$  is the largest eigenvalue of  $A$ .

We calculate the Bonacich power centrality measures by legislature.<sup>11</sup> We examine whether legislators elected during the years in which a nonpartisan blanket primary was used (1998 and 2000) have systematically different agreement scores and Bonacich power centrality. By focusing on the working relationships between legislators, we are able to observe the outcome of the shift in the electoral institution on not only the distribution of agreement and centrality in the legislature across years but also

the individual agreement and centrality of legislators newly elected under a blanket primary system against those who were not.

## Primary Elections and Legislator Behavior

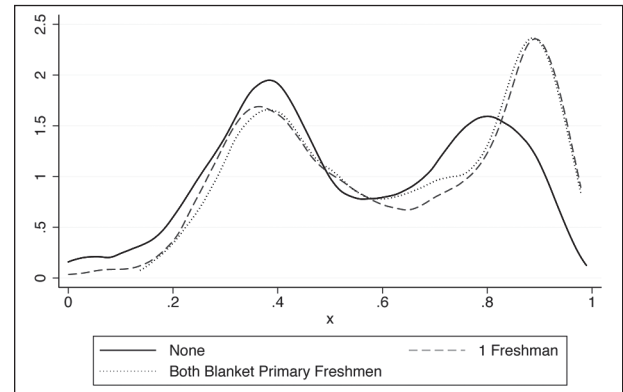
There are two comparisons by which to evaluate legislative behavior in the context of the blanket primary. The first comparison is a comparison of legislative sessions, *collective behavior*. Here we compare the collective behavior of all legislators who served in legislative sessions 1999–2000 and 2001–2 against the collective behavior of all legislators who served in the remaining legislative sessions following the passage of Proposition 140 in 1991.<sup>12</sup> This first comparison is necessary because it is possible that the implementation of the blanket primary resulted in a shift in behavior of an entire group of legislators, regardless of whether they had served in earlier sessions.

The second comparison is between the *individual behavior* of legislators who were newly elected under a blanket primary system and that of other legislators. These representatives were exposed to the most direct effects of the blanket primary system, and we compare their individual behavior against the individual behavior of other legislators who were elected under other primary systems. This allows us to compare the marginal effect of the blanket primary system within the same legislative session.

We evaluate these two comparisons using two different behavioral measurements described above—legislative power centrality and legislative agreement.

### Legislative Power Centrality Comparisons

Our first comparison is to look at the distribution of legislative power centrality for the legislative sessions immediately following the blanket primary elections against the distribution of legislative power centrality for the legislative sessions before and after the blanket primary, starting with 1991. Here we compare the distributions of power centrality for the entire legislative population. We separate legislators by party membership and compare the power densities of the blanket primary sessions against the other primary sessions in Figure 1.<sup>13</sup> We compare the power centralization distribution of legislators selected through the blanket primary to those selected from other primary systems in two ways. First, we conduct Kolmogorov–Smirnov tests—these test the null hypothesis that two observed samples are drawn from the same distribution. The advantage of these tests is that they compare moments other than simply the mean of the distribution, which is particularly advantageous given that our data are multimodal. We also conduct

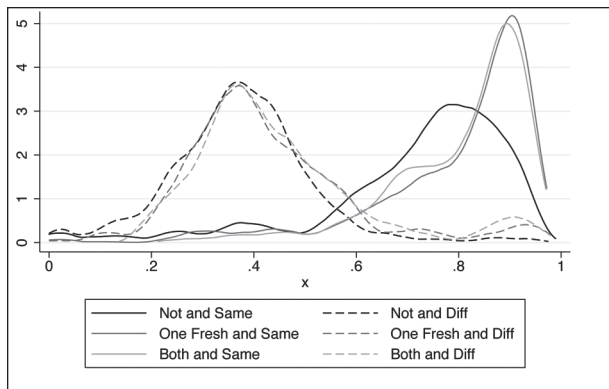


**Figure 1.** Legislative power density by session type: Blanket versus other primary, 1991–2006

*t*-tests to look for a difference in means between these distributions. While the Kolmogorov–Smirnov tests clearly would reject the null if the two means of the distributions were different, the difference in means tests is provided for easier interpretation.

When we break down the collective comparison of the distribution of power centrality by party membership in Figure 1, the distributions by party membership appear starkly different across, but not within, parties. The dark lines indicate the power centrality density for the majority party, and the gray lines indicate the power centrality density for the minority party. Solid lines are used to describe the blanket primary sessions, while dashed lines are used to describe the other sessions in our sample. Majority party members have no more power centrality under the blanket primary system than under the closed primary system. For members of the majority party, average power centrality shifts from 1.09 (with a standard deviation of 0.176 and 276 individuals) under the closed primary system to 1.12 (with a standard deviation of 0.086 and 97 individuals) under the open primary system. Yet the difference is not statistically significant.<sup>14</sup> For members of the minority party, average power centrality shifts from 0.83 (with a standard deviation of 0.163 and 214 individuals) under the closed primary system to 0.77 (with a standard deviation of 0.14 and 63 individuals) under the blanket primary system. Minority party members appear to have slightly less power centrality under the blanket primary system, and this difference is statistically significant.<sup>15</sup> Thus, we have evidence that for the minority party, the distribution of power centrality is statistically significantly different in the sessions following a blanket primary, though the average difference is quite small.

Our second comparison is in terms of individuals; here we examine the distribution of legislative power centrality for those individuals who were first elected under a blanket



**Figure 2.** Legislative power density by freshman system: Blanket freshmen versus other, 1991–2006

primary against individuals who were first elected in other years in the period 1991–2006. We anticipate that the distribution of legislative power centrality in the California legislature during this time period will be determined to a large extent by party membership. Therefore, we separate out individuals who are members of the majority party from those of the minority party. We plot the density distribution of power centrality for each group in Figure 2.

Figure 2 indicates that regardless of party membership, there are few differences in legislative power centrality. For those majority party members there is an increase in legislative power centrality if they were first elected in a blanket primary year (the average power centrality increases from 1.09 to 1.12, with standard deviations of 0.18 and 0.08, respectively), yet this difference is not statistically distinguishable from zero.<sup>16</sup> For members of the minority party, first winning office in a blanket primary year has almost no effect on their legislative power centrality (the average power centrality shifts from 0.814 to 0.812, with standard deviations of 0.16 and 0.15, respectively).<sup>17</sup> To a large extent in this time period, legislative power centrality is attributable to party identification.

We now turn to a simple multivariate analysis to analyze the relationship among legislative power centrality, majority party membership, and being elected as a freshman in a blanket primary year. In Table 2 we estimate coefficients for blanket primary freshman status and majority party membership from a simple linear regression where our dependent variable is the log of the power centrality score for each individual. We include control variables for the legislator's tenure in office, the percentage of the district that is registered to the same party as the legislator, number of committee assignments, and whether the legislator serves in a leadership position.<sup>18</sup> We include each of these control variables as they are likely to affect whether a legislator is a blanket freshman

**Table 2.** Ordinary Least Squares Regression Coefficients

Blanket freshman	0.057*
	(0.023)
Majority party member	0.301*
	(0.029)
District partisan registration (same party as member)	-0.173
	(0.147)
Tenure	-0.006*
	(0.003)
Leadership position	0.090*
	(0.024)
Number of committee memberships	0.047*
	(0.011)
Constant	-0.178*
	(0.072)
N	650
R <sup>2</sup>	.24

Dependent variable is  $\log(\text{power})$ . Robust standard errors are clustered by individual and are included in parentheses below each coefficient. The unit of observation is individual-year.

\* $\alpha = .05$ .

as well as the legislator's power centrality. Blanket freshmen, for example, may be more likely to be members of the majority. Inclusion of this control variable reduces omitted variable bias. We find that while majority party membership is a good predictor of legislative power centrality and is statistically significant at traditional levels, there is an additional effect of blanket primary freshman status on legislative power centrality.

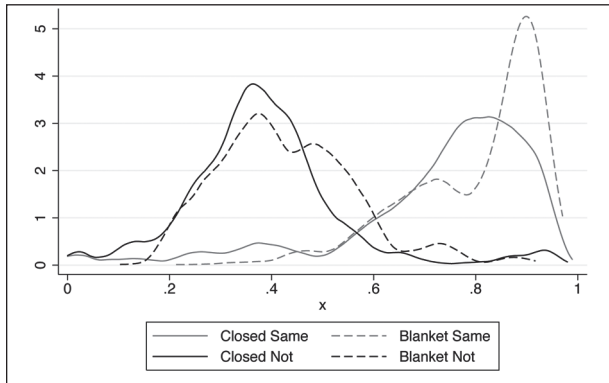
As these coefficients are suggestive but not conclusive, we turn to an alternative measurement of behavior, legislative agreement.

### Legislative Agreement Rates

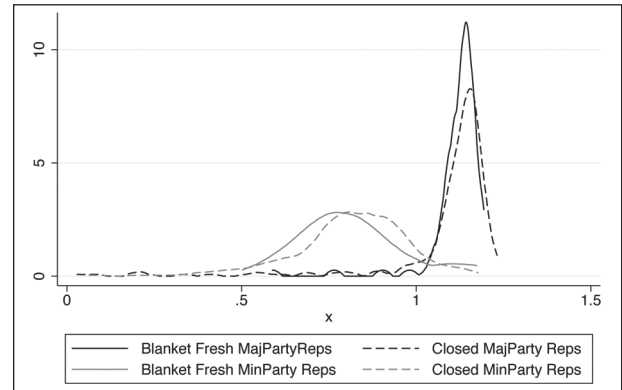
We now focus on the rate at which any individual pair of legislators agree with each other. We consider the same two comparisons (collective vs. individual) as in the previous section. Our quantity of interest is the rate at which legislators agree.

We plot the collective comparison in Figure 3. Here we separate individuals who served in sessions following the blanket primary from those who served in other legislative sessions, 1991–2006. We separate individuals into whether or not they are members of the same party. The distribution for same party membership is statistically significantly distinct ( $p$  value of .0) for those sessions served immediately subsequent to the blanket primary elections; among the individuals who are members of the same party, they are more likely to agree after blanket primary elections.





**Figure 3.** Legislative agreement by session type: Blanket versus other primary, 1991–2006



**Figure 4.** Legislative agreement, both blanket primary, one blanket, neither, 1991–2006

Average agreement increases from 0.72 (standard deviation of 0.20) to 0.80 (standard deviation of 0.13). For members who are members of different parties, their agreement rate distributions are also statistically significantly distinct ( $p$  value of .0). Here the results are the most stark; the average rate of agreement among members of different parties increases from 0.285 (standard deviation of 0.154) to 0.429 (standard deviation of 0.137) in sessions immediately following the blanket primary elections.

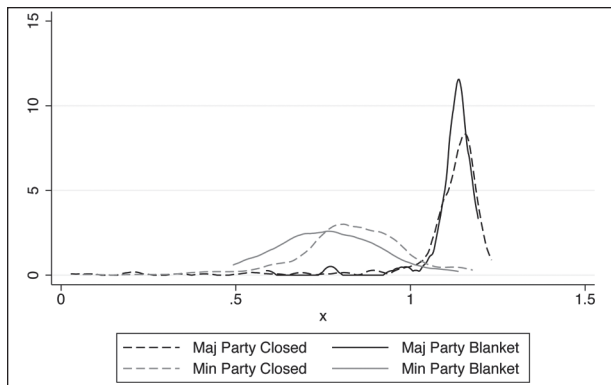
We then test the second comparison category, where we look at pairs of individuals who were freshmen legislators under a blanket primary system and compare their behavior to other paired legislators who were not elected in this time frame. Here we actually draw three comparisons: where neither legislator was first elected under a blanket primary, where one legislator was first elected under a blanket primary, and where both legislators were first elected under a blanket primary. We plot the density distribution of their agreement rates in Figure 4.

Here we are particularly interested to see the trend; are legislators who were elected during a blanket primary year more likely to agree with individuals who were not, compared to instances where neither legislator was elected in a blanket primary year? The average agreement suggests this pattern: for pairs where neither was first elected under a blanket primary system, their average agreement is 0.54 (standard deviation of 0.24), for pairs where one was first elected under a blanket primary system, their average agreement is 0.615 (standard deviation of 0.247), and for pairs where both were first elected under a blanket primary system, their average agreement is 0.63 (standard deviation of 0.234). A Kolmogorov–Smirnov test that combines the distributions of at least one blanket primary freshmen agreement rate against none demonstrates that these two distributions are statistically significantly different ( $p$  value of .0).

We draw a similar conclusion in Figure 5, where we plot the agreement rate for the same pairs but also separate out each group by whether or not they are partisan or bipartisan pairs. Treating one- or two-blanket primary freshmen pairs as equal, we note that the Kolmogorov–Smirnov tests allow us to ascertain that both the same-party and different-party agreement density distributions are statistically significantly different. For members of the same party, the agreement rate increases—for cases where neither legislator was first elected under a blanket primary system, their average agreement is 0.71 (standard deviation of 0.19), when one legislator was first elected under a blanket primary system, their average agreement is 0.79 (standard deviation of 0.167), and when both legislators were first elected under a blanket primary system, their average agreement is 0.80 (standard deviation of 0.14). This pattern is dramatically true also for individuals who are *not* members of the same party; their respective pattern of agreement increases from 0.37 (standard deviation of 0.138) to 0.426 (standard deviation of 0.164) to 0.45 (standard deviation of 0.168).

We now turn to a multivariate analysis. We conduct a negative binomial regression where our dependent variable is the agreement rate between any unique pair  $i$  and  $j$  (no repetitions). We cluster the standard errors by individual to account for correlation between observations. We control for party identification, legislative session, and the number of years that the legislators have served together. We present our results in Table 3. We replicate this analysis where we include an indicator variable that indicates if one or both members of the legislative pair were first elected under the blanket primary system.

As shown in the first column of Table 3, same party membership increases the probability that any two legislators will agree; but note the very significant effect of being part of a session that was elected during an open primary. While this coefficient is much smaller than party membership, it still has



**Figure 5.** Legislative agreement, blanket primary, and partisanship pairs, 1991–2006

a statistically significant effect on the probability that any two legislators agree. If we were to conduct the “thought experiment” where we move from no open primary sessions to all open primary sessions, we would increase legislative agreement by about 5 percent.<sup>19</sup> In the second column, we confirm our results about the effect of individuals who were elected as freshmen under the blanket primary system—they are simply more likely to agree.<sup>20</sup> Again, if we were to conduct the thought experiment wherein all legislators were elected under a blanket primary system, agreement would increase by almost 7 percent.<sup>21</sup>

## Conclusions

The nonpartisan blanket primary was implemented in California after Proposition 198 was passed by voters in the 1996 statewide primary election. In the materials distributed to registered voters, proponents of Proposition 198 argued for passage, asserting that “instead of facing up to these challenges, politicians from both major parties spend more time fighting with each other and promoting narrow political agendas than they spend doing their jobs.”<sup>22</sup> Clearly the proponents of the nonpartisan blanket primary believed that it would alter the internal dynamics of the state legislature, and that if implemented it would change legislative behavior.

In this article, we used social network theory to test two hypotheses about how primary election institutions should affect legislative behavior. Based on the two measurements of legislative power centrality and legislative agreement, we compare legislative sessions after the nonpartisan blanket primary system and the closed primary system and across individuals within the same sessions who were first elected under the blanket primary system or the closed primary system.

**Table 3.** Negative Binomial Regression

Same party	0.630*	0.629*
	(0.018)	(0.018)
Years together	−0.010*	−0.007*
	(0.003)	(0.003)
At least one leg blanket primary freshman		0.127*
		(0.013)
Open primary session	0.095*	
	(0.013)	
At least one leader	0.081*	0.086*
	(0.011)	(0.010)
Number of shared committees	0.044*	0.065*
	(0.009)	(0.009)
Constant	−0.945*	−0.977*
	(0.018)	(0.017)
N	26,087	26,087
Clusters	284	284
Wald $\chi^2$	1280.00	1528.69

Dependent variable is agreement rate. Robust standard errors are clustered by individual. The unit of observation is legislative pair-year.  
\* $\alpha = .05$ .

Individuals who are elected under blanket primaries are not overtly systematically different. An examination of freshmen elected under the blanket primary system reveals that they are as likely to become legislative leaders, serve on committees, and serve in future offices as their peers who were elected under the closed primary system. The party registration in their district does not affect whether freshmen are newly elected during a blanket primary year.<sup>23</sup>

When focusing on legislative centrality, we cannot reject the null hypothesis that legislators who served as freshmen immediately following a blanket primary election have the same amount of power centrality as legislators who were elected in different years. In addition, by looking at the differences between sessions, we appreciate that the behavior of the session as a whole is not particularly different. We have evidence that for the minority party, the distribution of centrality is statistically significantly different under a blanket primary system but the average change is small, and there is no difference for members of the majority party. The differences that we observe appear to be attributable to the relationship between party membership and those elected during a blanket primary. For those individuals who are members of the majority, there is an increase in legislative power centrality if they were first elected in a blanket primary year, yet for members of the minority party, first winning office in a blanket primary year has no effect on their legislative power centrality. Linear regression suggests that

party membership is heavily determinant with respect to legislative influence.

We observe much starker results when we focus on legislative agreement. The average rate of agreement during a blanket primary session is much higher than the average rate of agreement during a nonblanket primary session. Among the individuals who are members of the same party, they are more likely to agree after blanket primary elections. For members who are members of different parties, their agreement rate distributions are quite different; the average rate of agreement among members of different parties increases in sessions immediately following the blanket primary elections. For pairs of legislators where neither was first elected under a blanket primary system, their average agreement is lower than for pairs where one was first elected under a blanket primary system, and this is yet lower than the average agreement for pairs where both were first elected under a blanket primary system. This same pattern is true when legislators are separated by party.

Freshmen elected under the blanket primary system are simply more likely to agree with other legislators. This has little to do with systematic differences in their influence, as seen in the centrality analysis, or with their individual characteristics. This suggests something distinct about the type of legislator who is elected in this type of primary. While these results are by no means conclusive, they are consistent with other research that shows that some voters in an open primary will participate in the opposite party's primary. If that is the case, it is not unexpected that the type of legislator elected under an open primary would behave systematically differently. These combinations of findings suggest the possibility that the increased agreement could be attributable to a shift in representation.

Finally, we believe that by focusing on aspects of legislative behavior such as centrality and agreement, we are promoting new avenues of research on legislative behavior. As we noted earlier, the few studies that have looked at how primary election institutions might affect subsequent legislative behavior have limited their focus to an examination of ideological positioning; while it may be the case that legislators who are nominated for the general election under a nonpartisan blanket primary might be more ideologically moderate, that is not the only way such a primary institution can influence their later legislative behavior. California voters recently approved Proposition 14, invoking an open election system that will provide new avenues for future study on the rate of agreement between legislators. Hopefully future research will continue to study legislative behavior using social network theory and by so doing continue to deepen our understanding of how electoral and legislative institutions shape representative democracy.

## Appendix

**Table A1.** Bonacich Power Scores by Legislative Session

Year	M	SD	Min	Max
1991–92	0.9725	0.2345	0.1971	1.221
1993–94	0.9758	0.2200	0.2286	1.232
1995–96	0.9709	0.2401	0.0619	1.218
1997–98	0.9862	0.1666	0.3366	1.166
<b>1999–2000</b>	<b>0.9825</b>	<b>0.1876</b>	<b>0.4932</b>	<b>1.160</b>
<b>2001–2</b>	<b>0.9753</b>	<b>0.2220</b>	<b>0.5028</b>	<b>1.194</b>
2003–4	0.9823	0.1995	0.4246	1.169
2005–6	0.9723	0.2350	0.0280	1.182

Blanket primary sessions are in bold, 1998 and 2000.

**Table A2.** Assembly Representatives Who Were Freshmen after a Blanket Primary Election

Session year	Blanket freshmen		Committee Leaders		Future elected office members	
	n	%	n	n	n	%
1999	29	36.25	0	22	17	38.00
2001	59	73.75	5	24	29	69.00
2003	48	60.00	1	11	23	69.70
2005	26	32.10	1	15	9	39.00

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## Notes

1. The few research studies that have looked at legislative nominating elections have tended to focus on how primary elections influence general elections, not on how primary elections influence later legislative behavior. Recent studies include Herrnson and Gimpel (1995), Hogan (2003a, 2003b), and Lazarus (2005). A literature also exists with respect to the transition from candidates selected via party leadership to candidates selected via voters in a primary process (Merriam and Overacker 1928; Ware 2002). Ansolabehere et al. (2010) have more recently studied the linkage between the use of primary elections and competitiveness.

2. In California, these partisan independents register as “decline-to-state” (DTS) voters; in recent election cycles, California’s election code has allowed the political parties to decide if they wished to allow the DTS voters to participate in their party primary. If the party so decides, then a DTS voter can vote that party’s ballot in a primary election instead of the DTS ballot.
3. They operationalize this hypothesis with the following statistical model,  $D(\text{WinnerIdeal}_i, \text{DistrictIdeal}_i) = \alpha_0 + \alpha_1 \text{Semi}_i + \alpha_2 \text{Open}_i + \alpha_3 \text{NPOrBlanket}_i + \mu_i$ , where the primary categories are semiclosed, open, and blanket/nonpartisan and the base category is closed. The dependent variable is the difference between Americans for Democratic Action (ADA) score of the winner and the district’s presidential vote share.
4. The roll call data from 1975 to 1992 were generously provided by Seth Masket. The roll call data from 1993 to 2006 were obtained from the archive of the California State Assembly online: <http://www.assembly.ca.gov>. In addition, we checked our data collection efforts with the data provided by Jeff Lewis on his website.
5. There are two other potentially confounding factors in this time frame: term limits and Democratic control. Term limits first affected the California Assembly in 1996, and for all but one of the legislative sessions used here, the Democrats were in the majority party. Much of the analysis on term limits, however, suggests that legislators should be less likely to agree with each other after term limits are implemented (T. Kousser 2005), and the fact that there is a single party in the majority for most of these sessions ensures that the change in legislative behavior is not directly attributable to a single party.
6. After the redistricting in 1982, the partisan registration of the district is an excellent predictor of the likely winner in that district (J. M. Kousser 1996).
7. For a detailed introduction to network analysis, see Wasserman and Faust (1994).
8. This notion of centrality is very similar to that of eigenvector centrality, with the difference being that each individual is given some initial exogenous value in the network regardless of the links that form between individuals.
9. There are a large number of centrality measurements, and the choice of the particular centrality measurement is dictated by the substantive problem, as described by Freeman (1977). Other methods to compare networks include options to compare the Gini coefficients for different degree distributions, as in Goyal, van der Leij, and Moraga-Gonzalez (2006).
10. Here “appropriately small” is defined to be less than the inverse of the largest eigenvalue of the adjacency matrix,  $A$ . See Bonacich (1987) for further details.
11. The session averages are available in the appendix in Table A1. Here we present, by legislative session, the mean, standard deviation, minimum, and maximum values.
12. Proposition 140 instituted a term limit restriction beginning in 1991 (although no legislators would actually be unable to run for office until 1996). This means that apart from redistricting, there should be no other large exogenous changes to the legislative system during the years covered by our analysis.
13. Another option is to pool all members together and compare their joint power centrality densities for these years, comparing the power centrality for the sessions elected based on other primary systems against the blanket primary system. There is no statistically significant difference between the distribution of power centrality based on primary systems. A Kolmogorov–Smirnov test for equality of distribution produces a  $p$  value of .319. A  $t$ -test comparing the means of these two distributions also reveals that the mean of the power distribution during the blanket primary years is not statistically distinguishable from the mean of the power distribution outside of the blanket primary years ( $t = -0.116$ ).
14. A Kolmogorov–Smirnov test for equality of distribution reveals a  $p$  value of .177. A  $t$ -test comparing the means of these distributions reveals a  $t$ -statistic of  $-1.322$ .
15. A Kolmogorov–Smirnov test for equality of distribution reveals a  $p$  value of .001, and a  $t$ -test reveals a  $t$ -statistic of 2.69.
16. A Kolmogorov–Smirnov test for equality of distribution finds a  $p$  value of .037; the  $t$ -test statistic is  $-1.49$ .
17. A Kolmogorov–Smirnov test for equality of distribution finds a  $p$  value of .201; the  $t$ -test statistic is 0.087.
18. We include the district partisan registration as a control for the ideology of the representative, yet this is a variable that is highly correlated to majority party status, with a correlation coefficient of .5.
19. The actual first difference is .052, with a standard error of .007.
20. These results are robust to inclusion of a session-year variable. Results are available from the authors on request.
21. First difference is .069, standard error is .007.
22. See “Argument in Favor of Proposition 198,” at <http://primary96.sos.ca.gov/e/ballot/198fav1.html>.
23. In the appendix in Table A2, we record the number of new individuals elected in 1998 and follow their progress through our remaining data. There were twenty-nine freshmen elected in 1998, and many of them remained in office, so that in 2001 we observe a total of fifty-nine individuals who were elected under a blanket primary system. Many of them continue to remain in office, so that in 2003 there are forty-eight individuals still in office, and in 2005 there are twenty-six individuals still in office. We look to see if these individuals are systematically different in terms of their characteristics. This table also documents the number of these individuals who serve in leadership roles (all five leadership roles in the 2001–2 session are held by individuals newly elected under the blanket primary system) and who serve on at least one committee. We compare individuals elected in legislative sessions 1999–2000 and 2001–2 with those legislators who were first elected in earlier sessions but who also served in these two sessions.



In these two sessions, forty-six of eighty-eight of those elected in blanket primaries served on committees, as opposed to forty-nine of seventy-two others elected in earlier years. In addition, five of eighty-eight served as leaders as opposed to six of seventy-two elected in earlier sessions. Those elected for the first time under the blanket primary are not isolated by other legislators but do serve in powerful roles in the Assembly. Individuals who are elected for the first time under a blanket primary system are also very likely to go on to serve in future elected offices; thus, if their behavior is systematically different, then this has implications for the entire future of California governance. When we look at the district partisan registration breakdown of legislators who were newly elected in the blanket primary system and compare the district registration of these individuals to their peers, we do not observe statistically significant differences in party registration. For legislators elected in 1998 or 2000, those newly elected had an average percentage Democratic registration of .46 ( $SD = .11$ ) in their district, and those who were not newly elected had an average percentage Democratic registration of .47 ( $SD = .12$ ) in their district.

24. Sides, Cohen, and Citrin (2002) note that according to a poll conducted by the *Los Angeles Times*, in the 1998 California gubernatorial contest a mere 5 percent of registered Republicans and 7 percent of registered Democrats strategically crossed over and cast a ballot in the opposing party's primary election. They refer to this behavior as "raiding."
25. Our hypotheses also relate to those of Kanthak and Morton (2003, 20), who argue that primary systems affect vote outcomes. Kanthak and Morton's work is mostly a methodological critique of existing studies; they argue that to estimate the effects of primaries on outcomes it is necessary to conduct a two-stage estimation procedures, where the first stage estimates the choice of type of primaries (including no primary) and the second stage describes the vote outcome from the election. They find evidence of partisan differences in the choice of the type of primary, where "Democratic candidates benefit in semi-closed primaries while Republicans benefit in pureopen primaries."

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