

***MANAGING DISAGREEMENT WITHIN COMMUNICATION NETWORKS:  
MOTHS, FLAMES, AND POLITICAL ENGAGEMENT***

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***ABSTRACT***

Some people are located, either by intent or by accident, within closed social cells of politically likeminded associates. Others find themselves within politically diverse networks of communication where participants deftly avoid political topics in an effort at keeping the peace. Still others within these politically heterogeneous networks resemble the moth and the flame – incapable of resisting the temptation to address politics, even though a cacophony of dissenting voices is the inevitable result. What are the circumstances that give rise to each of these scenarios? What are the implications for the experience of diverse political viewpoints, as well as for the stimulation and inhibition of political communication? In other words, what steps do citizens take toward the management of political disagreement, and how successful are their efforts? We address these questions based on survey data collected as part of the 1996 Indianapolis-St. Louis Study. Our central argument is that political discussion stimulates argumentation, at the same time that argumentation impedes discussion, and the combined dynamic helps to explain patterns of persistent disagreement in democratic politics.

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A persistent problem in the analysis of socially communicated political information revolves around several interrelated endogeneity issues. The core of the problem is anchored within a two-fold dilemma. On the one hand, citizens are *not* hapless bystanders, either in the acquisition of political information, or in the selection of information sources. To the contrary, they are intentional and frequently judicious in the acquisition and analysis of political information, and they do not automatically absorb any information that happens to be available. On the other hand, the extent of individual control over the flow of information is incomplete, and the potential thus arises that a heterogeneous stream of information might sneak in through the back door, producing important consequences for the informational biases encountered by particular citizens (Achen 1986; Achen and Shively 1995; Huckfeldt and Sprague 1995).

At its most basic level, this problem arises whenever we observe a tendency toward clustering in the distribution of preferences among associated individuals. At least since the influential work of the Columbia sociologists (Lazarsfeld, Berelson, and Gaudet 1948; Berelson, Lazarsfeld, and McPhee 1954), analysts have recognized that individuals who are located adjacently within small scale social organization, such as friendship groups and communication networks, are likely to share political preferences. The problem with an observation such as this is that it inevitably leads to a chicken-and-egg problem. Did agreement predate discussion, leading to purposeful patterns of communication that were created to avoid the unpleasant and disquieting experience of political disagreement? Or did communication produce agreement through a process of persuasion and adjustment?

These questions are not simply provoked by methodological curiosity – the answers are fundamentally important to the nature of citizenship in democratic politics. To the extent that patterns of communication are tightly constrained by pre-existent patterns of political agreement,

the potential for political learning and democratic deliberation is radically curtailed. If citizens only talk to those with whom they agree, the opportunity to consider alternative viewpoints is eliminated, and the potential for a socially deliberative politics to generate political innovation and electoral change is extinguished. Indeed, if agreement is a precondition for communication, there is no opportunity for persuasion (McPhee 1963).

We address these possibilities in the analysis that follows. Do individuals locate themselves within political communication networks where they are shielded from the experience of political disagreement? If and when individuals come into contact with others holding disagreeable political views, do they monitor their interactions to avoid political communication? Both of these questions require that we address problems of endogeneity, and we employ several different strategies in the effort. All analyses are based on the 1996 Indianapolis-St. Louis study.

### ***Selecting In, Selecting Out, and Contextual Effects***

Contextual effects in politics arise when the probability of a political preference, choice, or behavior varies as a function of an individual's location in social, political, or geographical space (Przeworski and Teune 1970; Eulau 1986). In two classic and exemplary analyses, Tingsten (1963) and Langton and Rapoport (1975) demonstrated contextual effects when they showed that workers in Santiago and Stockholm were more likely to vote for parties of the left if they lived in residential areas more heavily populated by members of the working class. At the same time, demonstrations of contextual effects are seldom able confidently to specify the particular mechanism that produces individual-level political variation across space, and endogeneity problems often prove to be the fly-in-the-ointment for analyses of political information and influence.

Two models have dominated the interpretation of evidence that demonstrates political clustering among citizens. According to the first model, various mechanisms of political communication and influence produce politically interdependent preferences, which in turn lead to patterns of political clustering across space. Thus, returning to the work of Tingsten (1963) and Langton and Rapoport (1975), one argument is that workers living among other workers were more likely to come into contact with workers, and this increased frequency of contact produced shared political preferences and choices.

According to a second model, evidence of clustering in the distribution of political preferences and behavior is seen as the product of unmeasured individual level characteristics and predispositions – frequently the product of individuals who choose to locate themselves within environments characterized by particular distributions of political preferences (Hauser 1974; Achen and Shively 1995). Such a self-selection process occurs when committed partisans locate themselves among people who share their preferences, but it might also occur in far more subtle ways (MacKuen 1990).

In summary, workers in the working class areas of Santiago and Stockholm may have been more likely to interact with other workers who persuaded them to vote on the basis of class based preferences. Alternatively, the workers living among other workers may be there as a consequence of simple or complex sorting and mixing processes that are correlated with the political behavior in question. The problem is that each of these explanations is attractive, plausible, and less than wholly convincing. That is, it would seem unlikely *either* that individuals are wholly able to control the information they receive through social communication, *or* that they simply accept whatever information the environment happens to provide.

One might hope that more precise measures regarding individual locations within social networks would help resolve these problems, but this is certainly not the case. A variety of analyses have shown that political clustering occurs within communication networks: partisans tend to discuss politics with fellow partisans (Baker, Ames, and Renno 2006; Mutz and Martin 2001). Is this because individuals are influenced to adopt preferences that correspond to the political bias of the information they obtain, or is it because individuals choose communication networks to reinforce their own partisan predispositions (Downs 1957)?

Individual control over patterns of political communication within networks of association and communication might occur in at least two ways: (1) in the construction of communication networks, and (2) in patterns of conflict avoidance within communication networks. In the first, individuals construct their communication networks to exclude others who hold disagreeable political opinions and preferences. In the second, even if individuals associate with others who hold divergent preferences, they practice conflict avoidance – they bob and weave to avoid uncomfortable conversations. Both mechanisms produce the same result – disagreement *does not* occur, and hence deliberation and persuasion *cannot* occur.

What are the micro-motives that might be marshaled in support of social influence and self-selection interpretations for contextual effects? Most explanations revolve around arguments rooted in cognitive dissonance (Festinger 1957), social conformity (Asch 1963), or political economy (Downs 1957). The cognitive dissonance interpretation is that individuals cannot tolerate disagreement and seek to avoid it or resolve it, and the social conformity argument is that individuals typically bend their own preferences to fit their surroundings (but see Ross et al. 1976). The political economy argument is that people choose expert discussants

as sources of information, based on the criterion that they hold underlying preferences similar to their own (but see Calvert 1985).

Hence, the end result has typically been a strong expectation that individuals will be located within politically homogeneous surroundings. Either because they dislike disagreement, or because they are strategic information seekers, people will tend to seek out other individuals who hold politically agreeable views. If political disagreement does manage to sneak in through the back door, conformity arguments suggest that such disagreement will be resolved in relatively short order (Huckfeldt, Johnson, and Sprague 2004).

Perhaps the most compelling problem with these various expectations is that political heterogeneity is *not* a rare event within the discussion networks of American citizens – less than half of the two-party voters in the 2000 National Election Study identify all their political discussants as holding the same vote preference (Huckfeldt, Mendez, and Osborn 2004). Hence, in this paper we subject these expectations to empirical scrutiny, based primarily on the 1996 Indianapolis-St. Louis study. Particular attention focuses on two self selection mechanisms as means for managing heterogeneity within communication networks: individual choice and control over the construction of discussion networks, and individual choice and control over the political content of communication with the individuals who are located in these networks.<sup>1</sup>

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<sup>1</sup> These problems are also directly related to a series of observational challenges in political analysis. Systematic variations in individual behavior across space are directly responsible for the creation of both individualistic fallacies as well as ecological fallacies in political analysis. As Goodman demonstrates (1953, 1959), if the individual probability of a political behavior varies across space, the analyst will be misled by inferring individual behavior on the basis of ecological regression. (Also see Sprague 1976; Przeworski 1974; Achen and Shively 1995; King 1999.) At the same time, and under these same circumstances, an individualistic fallacy arises when individual level data are used to specify the probability of a behavior within a population if the behavior varies systematically across space within the population (Huckfeldt and Sprague 1993).

### *The Indianapolis-St. Louis Study*

In order to address these issues empirically, the analysis employs information on: individual citizens, the composition of their discussion networks, the frequency with which they report discussing politics with particular discussants in the networks, and the frequency with which they report disagreeing about politics. In addition to survey data collected from a main sample of respondents (the main respondents), we also analyze data taken from a sample of these respondents' discussants, and hence we are able to obtain direct measures from both the main respondent and the discussant. These data are taken from a 1996 election study conducted by the Center for Survey Research at Indiana University. The study includes two separate samples: a sample of main respondents (N=2,174) drawn from lists of registered voters, combined with a one-stage snowball sample of these main respondents' discussants (N=1,475). The main respondent sample is drawn from the voter registration lists of two study sites: (1) the Indianapolis metropolitan area defined as Marion County, Indiana; and (2) the St. Louis metropolitan area defined as the independent city of St. Louis combined with the surrounding (and mostly suburban) St. Louis County, Missouri.

Interviews were conducted over the course of the campaign, beginning in March of 1996 and ending in January of 1997. The pre-election main respondent sampling plan was to complete interviews with approximately 40 main respondents each week before the election, equally divided between the two study sites. After the election, an additional 830 respondents were interviewed, once again divided between the St. Louis and Indianapolis metropolitan areas. Discussant interviews were completed at a rate of approximately 30 interviews each week during the pre-election period, with an additional 639 interviews conducted after the election. For the pre-election main respondent interviews, the associated discussant interviews were completed

within two subsequent interview weeks of the main respondent interview. After the election, both main respondent and discussant interviews were completed as rapidly as possible.

Every respondent to the survey was asked to provide the first names of not more than 5 discussion partners. A random half of the sample was asked to name people with whom they discuss “important matters”; the other half was asked to name people with whom they discuss “government, elections, and politics” (Burt 1986; Huckfeldt and Sprague 1995; Huckfeldt et al. 1998b). After compiling a list of first names for not more than five discussants, the interviewers asked a battery of questions about each discussant. At the end of the interview, we asked the main respondents for identifying information that might be used to contact and interview their discussants. Based on their responses we completed 1,475 discussant interviews, employing a survey instrument that was very similar to the instrument used in the main respondent interview.<sup>2</sup>

Within the context of the battery of questions regarding each discussant, after being asked how many days they talked with the discussant during a normal week, the main respondents provided answers to the following sequence of questions:

When you talk with (discussant name), do you discuss political matters:  
often, sometimes, rarely, or never?

When you discuss politics with (discussant name), do you disagree: often,  
sometimes, rarely, or never?

These questions are central to our paper’s analysis. The first provides the main respondents’ perceptions regarding the relative frequency of political discussion within the dyad – relative, that is, to the frequency with which more general interaction occurs. The second provides the

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<sup>2</sup> Additional information regarding the sample design and response rates can be found in Huckfeldt, Sprague, and Levine 2000.

main respondents' perceptions regarding the frequency of disagreement, relative to the frequency of political communication.

### ***Endogeneity and Network Construction***

The substantive content of the name generator was randomly assigned to respondents, and we treat it here as an experimentally supplied treatment. That is, a randomly assigned half sample was asked to provide the names of the people with whom they discuss “important matters”, and the other half sample was asked to provide the names of the people with whom they discuss “government, elections, and politics.” The questionnaire was organized to minimize the political content that occurred before the name generator, and hence the main respondents were not being encouraged to think about politics and elections before they were asked the question. We are not assuming that an individual’s list of “important matters” discussants will necessarily be different or separate from their “government, elections, and politics” discussants. To the contrary, we are employing the randomly applied network name generator to address the issue empirically.

The question thus becomes, are networks of political communication distinct from more generalized networks of communication? If they *are* distinct, do people construct networks of political communication to be politically homogeneous? Other analyses of the experimental name generator show important differences in patterns of response (Huckfeldt, Levine, Morgan and Sprague 1998). This analysis extends those earlier efforts to consider the implications for patterns of diversity and disagreement within discussion networks. Do people construct political communication networks to eliminate disagreement and the receipt of political information that diverges from their own points of political orientation?

In Table 1, several compositional measures for the respondents' networks are regressed on a dummy variable that measures the form of the name generator that is used to solicit network information from the main respondent. Respondents who responded to the politics name generator are coded 1, and respondents who responded to the "important matters" name generator are coded 0. Hence the slope is directly interpretable as a difference in means between the groups of respondents responding to each, where the intercept is the mean for the important matters name generator, and the sum of the intercept and the slope is the mean for the politics name generator. What does this analysis show? In general, the differences are quite modest. With the exception of political discussion frequency within the network, the coefficients for the dummy variable produce marginal t-values that vary between 1.86 and 2.17. Finally, as we shall see, the magnitude of the differences are quite modest, with little evidence of any dramatic differences between the two half samples.

Focusing on the model in the first column of Table 1, each main respondent was asked to provide judgments regarding which presidential candidate each of their discussants supported. On this basis, and on the basis of the respondents' *own* reported candidate preferences, the first column of Table 1 considers percentage levels of shared candidate preferences within the networks for main respondents who supported a major party candidate. Respondents report perceived levels of shared candidate preferences that indicate 63 percent agreement in important matters networks and 65 percent agreement in political networks, but the difference is not statistically discernible, with a t-value of .94.

The second column of Table 1 provides the largest difference in network composition between the name generators. Reported frequencies of political discussion produce mean levels

that are higher in the politics networks (2.91) than in the important matters networks (2.72), with a large t-value. But even here, the effect of the name generator falls short of being dramatic.

The third column of Table 2 supplies an analysis of reported frequency of disagreement while discussing politics within the networks. In this instance respondents report levels of disagreement frequency that are slightly higher in political networks (the mean is 2.57) than in important matters networks (the mean is 2.51).

The fourth column of Table 1 provides some evidence of a difference in the mean levels of political expertise within the discussion networks. Each respondent was asked to provide their judgment regarding how much each of the discussants knows about politics. And the results show that, on average, the important matters discussants are perceived to know slightly less than the political discussants – the means are 2.21 and 2.25 respectively.

In summary, while there would appear to be systematic differences in the political composition of the discussion networks, there is little evidence of any profound differences with respect to levels of political disagreement. What conclusions might we draw on the basis of these results? The most obvious would appear to be that “important matters” discussants are not much different from “politics” discussants when it comes to the political diversity of the stream of information provided through these networks.

None of this means that there are no differences in the construction of the networks. Indeed, other analyses of the Indianapolis-St. Louis data suggest otherwise (Brady and Huckfeldt 2002; Huckfeldt et al. 1998). Neither do we intend to suggest that people do not turn to different people for different purposes. Katz and Lazarsfeld (1955), as well as other analyses of the Indianapolis-St. Louis study (Huckfeldt 2001), show that patterns of communication are

intimately tied up with levels of expertise regarding particular subject matter, as well as with individual purpose in the use of socially communicated information.

Table 1 does provide little evidence to suggest that people are particularly careful to construct networks of political communication that reflect their own political preferences. At the same time, this becomes a moot point if *all* networks of communication, regardless of substantive content, are constructed to minimize disagreement and maximize shared political viewpoints. The most direct evidence we have to report with respect to this issue relates to the accumulated evidence regarding levels of political heterogeneity within political communication networks. In terms of Table 1, only 63 percent of the discussants in the important matters networks and 65 percent of the discussants in the politics networks share the respondents' candidate preferences. Moreover, these levels of agreement decrease substantially if we include respondents who are Perot supporters, or respondents who do not report candidate preferences.<sup>3</sup>

The most direct response to this issue is, once again, to cite levels of political disagreement among discussants within the 2000 National Election Study (Huckfeldt, Mendez, and Osborn 2004). Among those respondents interviewed after the election who identify at least one discussant, only 41 percent of the Gore voters are located in networks where they perceive that everyone supports Gore, and only 47 percent of the Bush supporters are located in networks where they perceive that everyone supports Bush. Moreover, 35.5 percent of all Bush voters name at least one discussant who supports Gore, and 36.7 percent of all Gore voters name at least one discussant who supports Bush. Hence, we see two things: (1) there is very little difference in patterns of disagreement within political communication networks and other

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<sup>3</sup> If all respondents are included regardless of their preferences, the levels of agreement drop to 49 percent for important matters networks and 53 percent for political networks. Indeed, among Perot supporters, the comparable levels of agreement are only 16 and 26 percent respectively.

networks, and (2) the levels of disagreement are quite high in both. This is not to say that clustering does not occur – Democrats are certainly more likely to talk with Democrats and Republicans are certainly more likely to talk with Republicans. At the same time, it would misrepresent the evidence to suggest that citizens are imbedded within homogeneous networks of politically like-minded individuals, or to suggest that political communication networks are dramatically more homogeneous than generalized discussion networks.

### ***Endogeneity and Censored Patterns of Communication***

On the basis of the evidence presented thus far, it would appear that the construction of political communication networks is, at most, only weakly endogenous with respect to political preference. This is not to suggest, however, that agreement and political preference do not play substantial roles in the communication that occurs among citizens. In the remainder of this analysis, we consider another form of endogeneity – the censoring of political conversations in anticipation of political disagreement. Most readers recognize this phenomenon from personal experience – the avoidance of political discussions that we know will produce arguments and contentious exchanges. The problem is presented in a compelling manner by MacKuen (1990) in his analysis of political conversations. In the analyses that follow we consider the possibility that, even within networks of political communication, the frequency of political communication and the potential of political disagreement may be related in complex ways.

We turn from an analysis of individuals and their aggregated communication networks to an analysis of the individual dyads that are included within these networks. Hence, the unit of analysis is a dyadic communication link, based on interview data obtained from both the main respondent who reported the link and the discussant who was thus identified. We begin by reporting that the simple correlation between the frequency of political communication and the

frequency of disagreement within 1,422 dyads is .06, where both discussion frequency and disagreement frequency are based on the previously discussed main respondent reports. The curious fact about this correlation is that it is greater than zero. One would expect, based on the work of Downs (1957) and Festinger (1957) and Mutz (2002) and many others – that disagreement should inhibit communication and hence produce a negative correlation.

At the same time, suspicions are immediately aroused by the likelihood of endogeneity within the relationship. On the one hand, expectations of disagreement would be expected to inhibit political discussion. Conversely, the more frequently people talk about politics, the more likely it becomes that disagreement will occur – almost by definition. More political talk yields more opportunities for political disagreement, but more disagreement yields censored patterns of communication and a reduced frequency of political discussion.

Faced with such a problem, a common recourse is to locate both endogenous variables within a larger system of equations that also includes the exogenous variables which provide explanatory purchase. In the current context, this is a relatively straightforward task. As Figure 1 suggests, the reported frequency of political discussion within a dyad is not only explained by the level of political disagreement within the dyad, but also by a set of other characteristics for both discussion partners: their self-reported levels of political interest, their demonstrated levels of political knowledge, their educational levels, and the frequency with which they report discussing politics with others. Moreover, since we have already seen that the frequency of political discussion is higher in political discussion networks than in important matters networks, we include the dummy variable for the form of the name generator question answered by the main respondent.

In contrast, the perceived frequency of political disagreement within a dyad is not only affected by the reported frequency of discussion within the dyad, but also by the reality of divergent preferences. This reality is captured by the level of correspondence (or divergence) between the partisan orientations of the main respondent and the discussant. This reality is measured with three variables – the main respondent’s party identification, the discussant’s party identification, and the multiplicative interaction between the two. (In both instances, the seven-point party identification scale is scored from -3 for strong Democrats to 3 for strong Republicans). In addition, to allow for the possibility that some people may be more inclined to engage in political argumentation, we include a measure for the mean level of disagreement reported by the main respondent with her other discussants.

Estimating this system of equations is problematic due to the ordinal scales used to measure both endogenous variables – discussion frequency and disagreement frequency within the dyad. While important progress has been made in the analysis of structural equation models with qualitative endogeneous variables (Amemiya 1978; Nelson and Olson 1978; Achen 1986; Newey 1987; Rivers and Vuong 1988; Alvarez and Glasgow 2000; Cameron and Trivedi 2005), the problem of ordinal endogenous variables awaits resolution. We proceed by treating both variables as continuous and estimating the system of equations using three stage least squares (Zellner and Theil 1962). The results of the estimation are shown in Table 2, where we see pronounced and reciprocal effects between disagreement and discussion frequency. More talk yields more disagreement, but more disagreement yields less talk.

What does this suggest regarding the positive coefficient obtained from a simple correlation of discussion frequency with disagreement frequency? A simple regression of one variable on the other presents a weak and incorrectly specified measure of association that is

actually the residue of pronounced and separate effects with opposite signs. Similar results are obtained (in analyses not shown here) if the ordinal endogenous variables are treated as binary and the equations are estimated as two simultaneous probit models, using Newey's (1978) method, or conditional maximum likelihood, with or without bootstrapped standard errors for the coefficients. In summary, the results are sustained either if we treat the endogenous variables as continuous, or if we discard information by treating them as binary. Alternatively, the results are also sustained using a brute force two-stage ordered logit procedure in which: (1) instruments are created based on ordered logit regressions of discussion frequency and disagreement frequency on all the exogenous variables in the system; and (2) these instruments are substituted for the right hand side endogenous variables in each of the original equations, using ordered logit models with bootstrapped standard errors.

### **Moths, Flames, and the Irresistibility of Disagreement**

In the face of political diversity, how do people respond to the experience of political disagreement within their own communication networks? To address this question, we give more deliberate attention to the relative magnitudes of effects that arise due to various combinations of the right-hand-side endogenous and exogenous variables in Table 2. First, as Figure 2 shows, the reported frequency of disagreement is a direct function of the underlying reality of self-reported preferences. The frequency of disagreement is at its maximum in dyads with strong partisans who do not share the same party, and these levels of disagreement drop to the lowest reported frequencies for strong partisans who support the same party. In contrast, it is not that independents and weaker partisans are unlikely to generate disagreement, but rather that the level of disagreement is less likely to be driven by the particular pairing of partisan orientations within the dyads. The experience of disagreement does not disappear among

individuals with less extreme viewpoints. To the contrary, two independent Democrats (or Republicans) demonstrate a higher level of disagreement than two strong Democrats (or Republicans).

In Parts A, B, and C of Figure 3, the effect of discussion frequency on disagreement frequency is shown across several different partisan pairings: among independents, among strong partisans who are loyal to different parties, and among strong partisans who are loyal to the same party. The frequency of disagreement increases substantially across the range of discussion frequency – more frequent political discussion yields substantially more frequent political disagreement. And the effect of discussion frequency compares favorably to the effect of objectively divergent partisan orientations – to the effect of a strong partisan from one party discussing politics with a strong partisan of the opposite party.

Finally, in Part D of the figure, we consider disagreement as negative feedback. The plot shows that the reported frequency of discussion decreases as the frequency of disagreement increases. This constitutes evidence of a self-selection effect via censoring within dyads. Individuals are, in general, less likely to talk politics on a frequent basis as a function of perceived disagreement frequency. But as we have seen, there is more to the story. While disagreement serves as negative feedback on the frequency of discussion, its effect is offset by an important set of stimuli to frequent discussion – the political interest, knowledge, and educational levels of both main respondents and discussants. Politically engaged citizens talk about politics more frequently, and hence the frequency of political discussion within communication networks is stimulated by these moths who cannot resist the flames!

### *The Dynamical Implications of Moths and Flames*

The important dynamic footprint in the simultaneous relationship between discussion and disagreement is that higher frequencies of political discussion enhance the likelihood of disagreement, while higher frequencies of political disagreement diminish the likelihood of discussion. In the language of dynamic systems, political disagreement serves as negative feedback on political discussion, but political discussion serves as positive feedback on political disagreement. Hence, discussion and disagreement are dynamically interdependent and joint in their distributions over time.

We can safely assume that the frequencies of disagreement and discussion are inherently self-limiting. At the extreme, time spent in political discussion is limited by the 24 hour day, and hence the rate of increase in political discussion will necessarily decline as political discussion reaches its limit. Similarly, the frequency of political disagreement cannot exceed the frequency of political discussion. And thus, as the frequency of political disagreement approaches the frequency of political discussion, the rate of increase in disagreement must necessarily decline.

These dynamical properties are incorporated into the following non-linear difference equation model.

$$\Delta T_t = R_{1t} T_t \quad (1)$$

$$R_1 = f(-T_t, -D_t) \quad (2)$$

$$= g(1 - T_t) - dD_t \quad (3)$$

$$\Delta D_t = R_{2t} D_t \quad (4)$$

$$R_2 = f(-D_t, +T_t) \quad (5)$$

$$= a(rT_t - D_t) \quad (6)$$

where:

$T_t$  = frequency of political discussion, measured on the unit interval ( $\Delta T_t = T_{t+1} - T_t$ ).

$D_t$  = frequency of political disagreement, measured on the unit interval ( $\Delta D_t = D_{t+1} - D_t$ ).

$R_{1t}, R_{2t}$  = time variant rates of change in discussion and disagreement.

$g$  = effect on the rate of change in the discussion frequency due to the distance between the discussion level at  $t$  and its maximum. (Note that all parameters –  $g, d, a,$  and  $r$  – are defined to be positively valued.)

$d$  = effect on the rate of change in the discussion frequency due to the level of political disagreement at  $t$ .

$r$  = the proportional level of political disagreement that an individual is comfortable devoting to political disagreement. (Hence,  $rT_t$  represents an individual's ideal level of political disagreement.)

$a$  = effect on the rate of change in disagreement frequency due to the adjustment in the difference between an individual's ideal level of political disagreement and the actual level of political disagreement at  $t$ .

In equations 1 and 4, the model specifies changing levels of discussion and disagreement as a pair of rates operating on the previous levels of discussion and disagreement, respectively.

In equations 2 and 3, the change in discussion is defined to be negatively affected by increased levels of both discussion and disagreement. In contrast, equations 5 and 6 define the change in frequency of disagreement to be positively affected by the frequency of discussion, but negatively affected by the frequency of disagreement.

It is important to emphasize that we neither intend nor pretend to estimate the values of the model parameters with any precision. The only goal of this exercise is to consider the dynamic logic that is implied by the Table 2 model – a dynamic in which the level of disagreement is stimulated by discussion, but in which the level of discussion is attenuated by disagreement. In the analysis that follows, we (arbitrarily) set the parameter values as  $g=d=a=.4$

and  $r=6$  while initial conditions are varied. Other parameter values would function equally well, and the outcome of the analysis does not depend on these particular values.

In Figure 1, discussion frequency and disagreement frequency are plotted on time, based on the previously discussed parameter values and varying initial conditions. First, notice that the plotted values typically overshoot their equilibrium levels before settling down to equilibrium. Second, discussion and disagreement demonstrate asynchronous time paths. Finally, the relationship between discussion and disagreement demonstrate a joint equilibrium toward which all the time paths converge, regardless of initial conditions.

These dynamic properties become more obvious if we display the relationship between discussion and disagreement on a phase plane defined by discussion frequency along the horizontal axis and disagreement frequency along the vertical axis. Each trajectory on the phase plane represents a particular time sequence of coupled disagreement and discussion levels, where each coupled point in time is represented by a bubble along the trajectory. Hence, the horizontal and vertical distances between sequential bubbles represents the magnitude of the change in a single period of time that is produced in discussion and disagreement respectively.

Once again, a fairly typical pattern appears in which the trajectories quickly overshoot their respective equilibria, but then recover and converge more slowly. We also continue to see asynchronous time paths which appear in the phase plane as counterclockwise spirals toward equilibrium. Every pair of initial conditions converges to the same equilibrium value, and it can be shown that the equilibrium defined by the model parameters is always locally stable in the first, positively valued quadrant – the only quadrant that is substantively meaningful given model definitions. In general, convergence is more rapid as a function of the distance from equilibrium, with several notable exceptions. When the initial conditions involve a high level of discussion

but a low level of disagreement, the convergence toward a lower level of discussion and a higher level of disagreement is quite slow. In contrast, when the frequencies of discussion and disagreement are both low, the level of discussion increases quite slowly until it accelerates and overshoots equilibrium before slowly converging.

What are the substantive implications of these dynamical patterns? The relatively straightforward dynamic logic underlying discussion and disagreement produces relatively complex, asynchronous recoveries to equilibrium. While the representations of the time paths would become even more complex if perturbations were added along the way, it is important to emphasize that the underlying dynamic complexity is produced neither as a consequence of randomness nor as a consequence of individual idiosyncrasies. These dynamical patterns are rather due the simple dynamic structure underlying discussion and disagreement: more talk yields more disagreement, but more disagreement yields less talk. Perhaps most important, this dynamic tension serves to eliminate neither discussion nor disagreement. Political discussion is not a stark choice between communication absent disagreement or disagreement absent communication. Rather, the dynamic logic of discussion and disagreement is capable of sustaining both in a stable equilibrium relationship.

### ***Conclusion***

What keeps disagreeable dyads from turning to other, less controversial subjects of conversation? What keeps political communication from being extinguished in disagreeing dyads? People who are interested in politics are more likely to discuss politics, regardless of the circumstances in which they are imbedded. All else being equal, disagreement serves as negative feedback on the frequency of disagreement, but all else is not equal, particularly with respect to levels of political engagement and civic capacity across individuals. Hence, we see a

dynamic tension in which frequent discussion makes disagreement more likely, but frequent disagreement makes discussion less likely.

The dynamic tension between disagreement frequency and discussion frequency is particularly important because, as we have seen, individuals are frequently located within politically heterogeneous communication networks. The construction of political discussion networks is, at most, modestly endogenous with respect to political disagreement. Political discussion networks do not demonstrate substantially lower levels of political disagreement than communication networks that are not defined politically. Moreover, the levels of political disagreement within both types of networks are quite substantial.

Hence, the primary means for reducing political disagreement is to avoid political discussions with politically disagreeable associates. And we have seen that such a censoring does indeed occur – disagreement demonstrates negative feedback on discussion frequency. At the same time, people who are politically engaged by politics and political discussion are more likely to talk about politics, in spite of disagreement. Indeed, their commitment to and fascination by politics motivates them to discuss more frequently, and the frequency of discussion stimulates more frequent disagreement. In this way, much like the moth and the flame, those who are politically engaged by the democratic debate are destined to encounter substantial doses of disagreement and argumentation. And these encounters are in part responsible for sustaining the vitality of political deliberation among citizens.

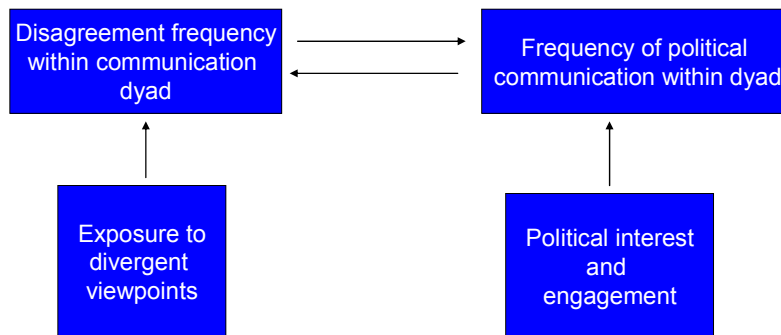
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Figure 1. The simultaneity of discussion and disagreement.



***A. Endogenous variables:***

Disagreement frequency within communication dyad  
 Frequency of political communication within dyad

***B. Exogenous variables***

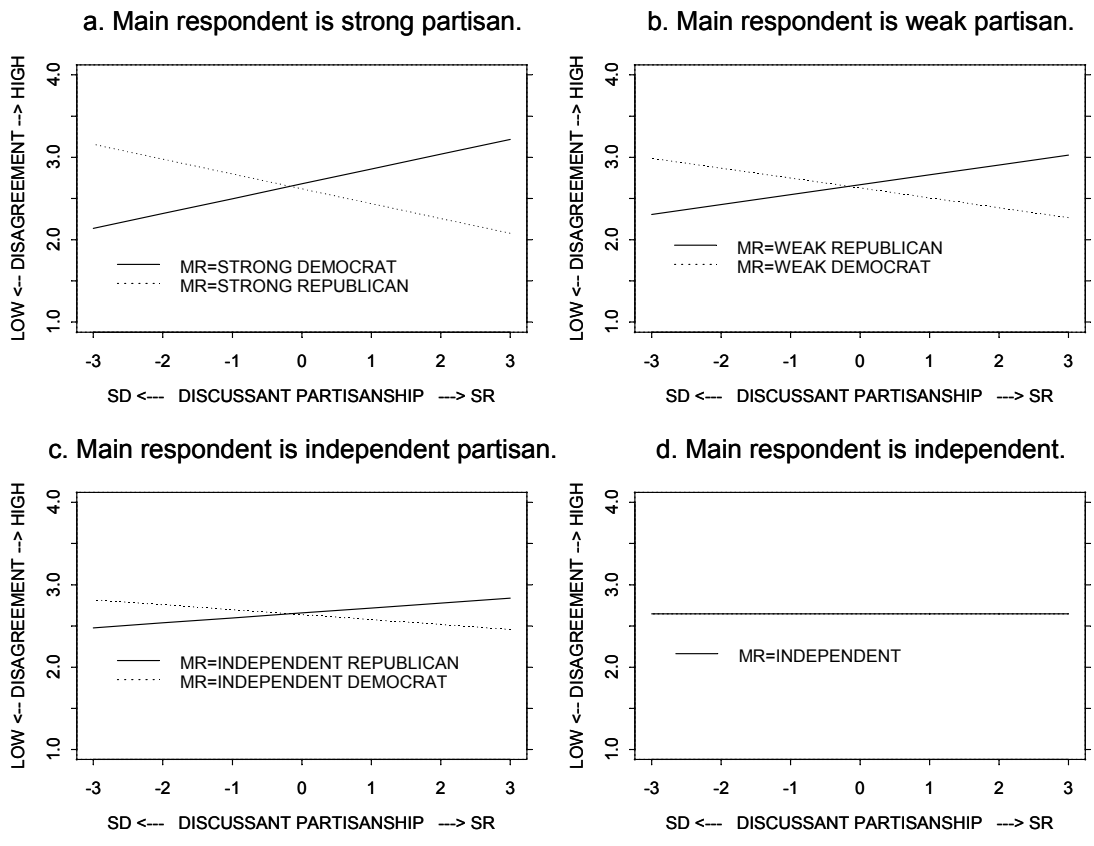
*Political Interest and Engagement:*

main respondent interest, knowledge, education, and frequency of discussion with others  
 (main respondent self report)  
 discussant interest, knowledge, education, and frequency of discussion with others  
 (discussant self report)  
 political discussion/important matters network (experimentally applied name generator)

*Exposure to Divergent Viewpoints:*

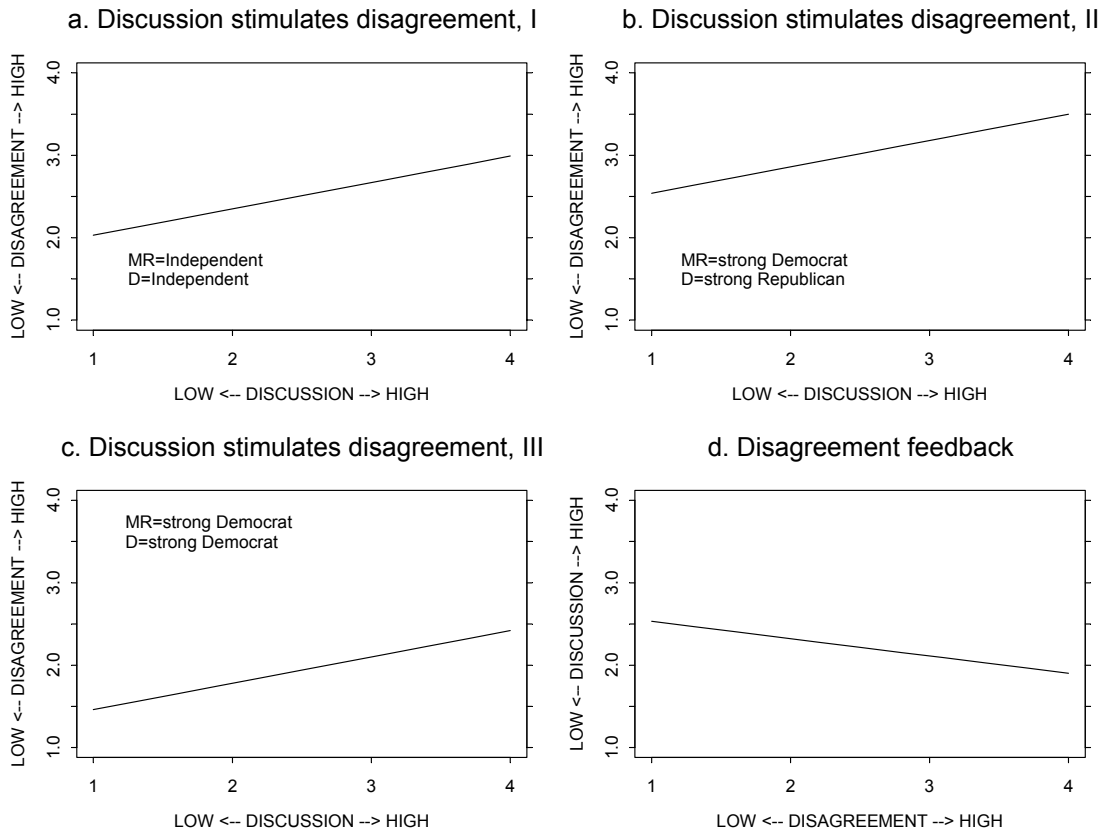
main respondent party identification (self-reported)  
 discussant party identification (self-reported)  
 discussant party identification X main respondent party identification  
 percent of others with whom main respondent disagrees (main respondent report)

Figure 2. Frequency of disagreement reported by the main respondent within the dyad, by self-reported partisanship of the main respondent and the discussant.



Source: Table 2 estimates.

Figure 3. Jointly contingent frequencies of political discussion and disagreement within dyads.



Source: Table 2 estimates.

Figure 4. Simulations of political discussion and political disagreement plotted on time.  
( $a=g=f=.4$ ;  $r=.6$ )

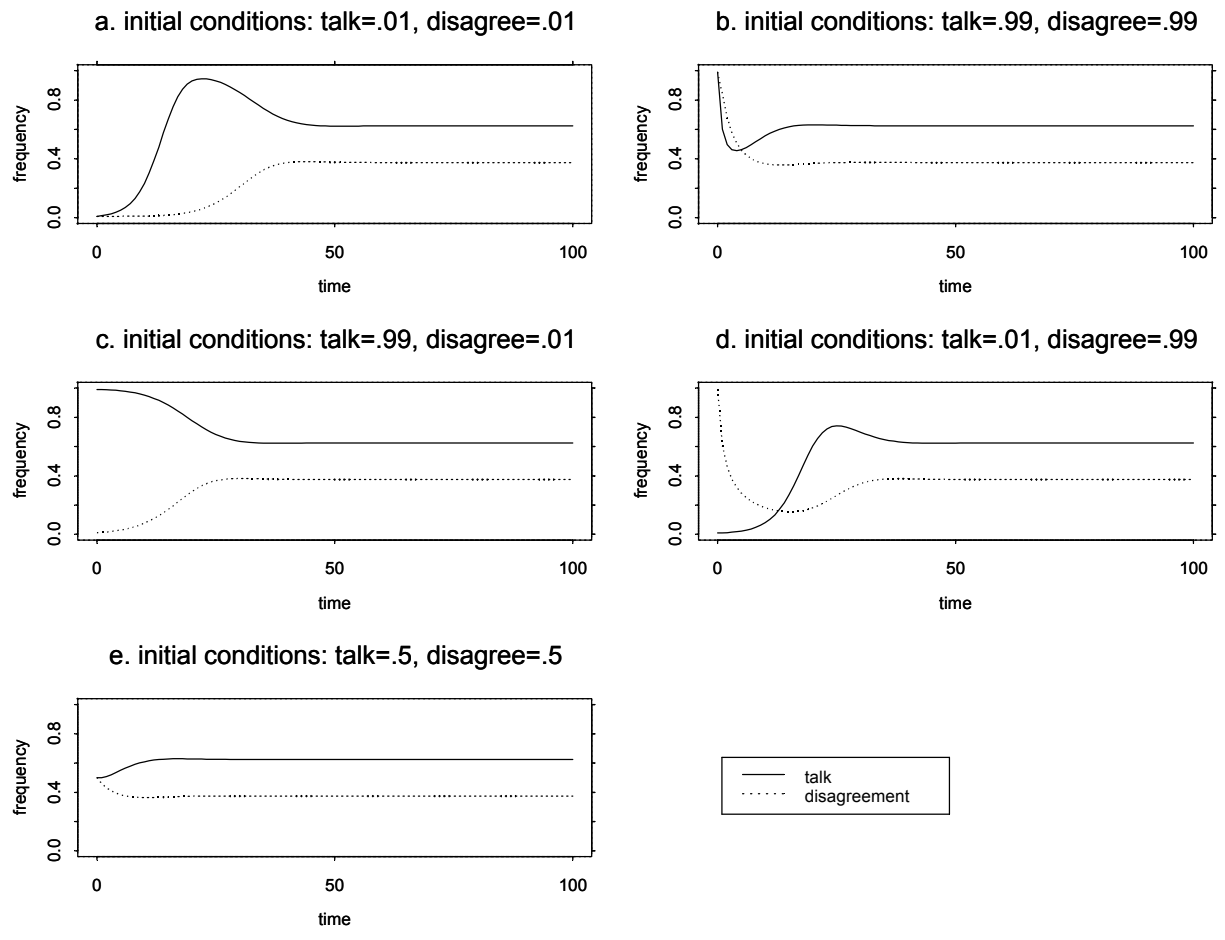


Figure 5. Simulations of disagreement frequency by discussion frequency, plotted on time in the phase plane. ( $a=g=f=.4$ ;  $r=.6$ )

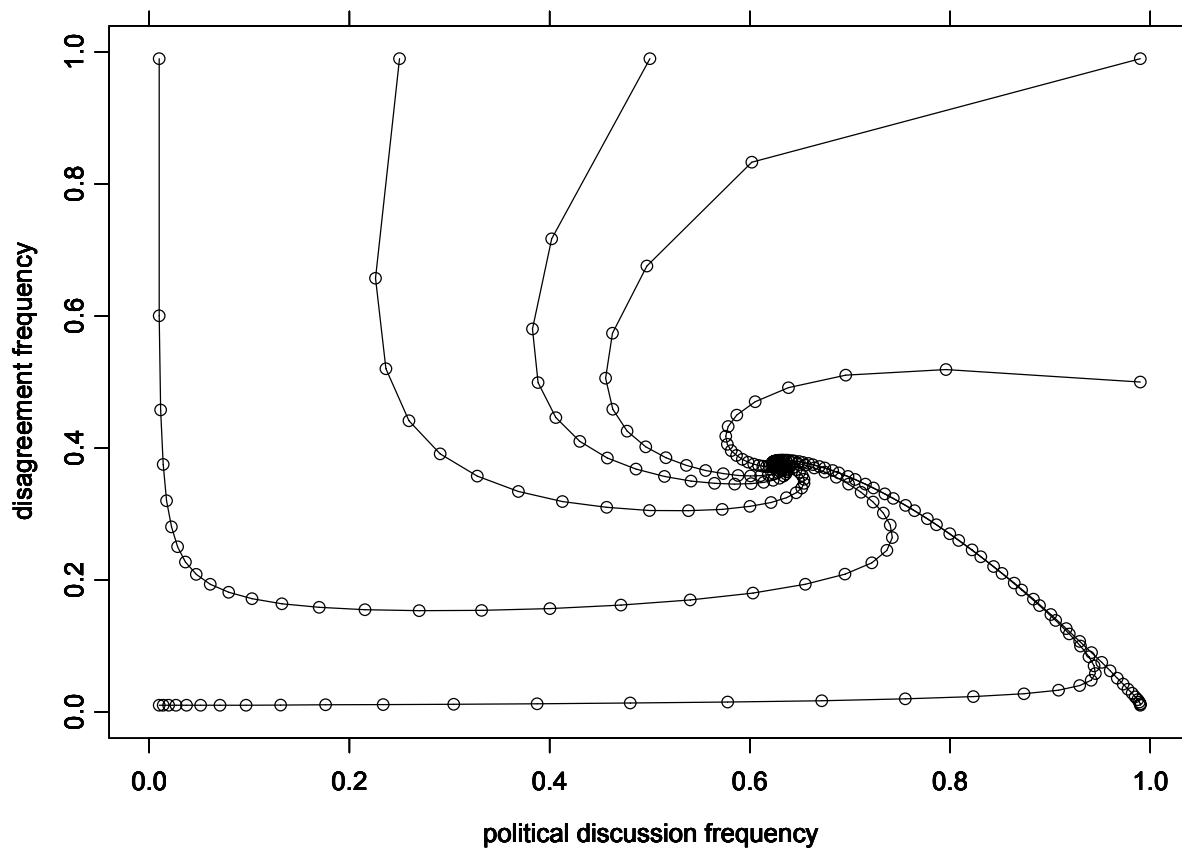


Table 1. Effects of randomly applied network name generator on political composition of network. All compositional measures are based on main respondent reports. (Coefficient t-values are in parentheses.)

	percent same presidential <u>vote</u>	mean political discussion <u>frequency</u>	mean political disagreement <u>frequency</u>	mean political <u>knowledge</u>
constant	.63 (46.40)	2.72 (133.75)	2.51 (120.82)	2.21 (158.35)
politics name generator	.02 (.94)	.19 (6.60)	.06 (1.95)	.04 (1.86)
R <sup>2</sup>	.00	.02	.00	.00
SE of estimate	.40	.61	.61	.42
N	1361	1739	1697	1732

percent same presidential vote: the percentage of identified discussants who are perceived to support the same presidential candidate as that supported by the main respondent, for main respondents who support a major party candidate

mean political discussion frequency: "When you talk with [discussant name], do you discuss political matters: often (scored 4), sometimes (3), rarely (2), or never(1)?"

mean political disagreement frequency: "When you discuss politics with [discussant name], do you disagree: often (scored 4), sometimes (3), rarely (2), or never(1)?"

mean political knowledge: "Generally speaking, how much do you think [discussant name] knows about politics? Would you say: a great deal (scored 3), an average amount (2), or not much at all (1)?"

Note: The unit of analysis in this table is the individual respondent. Respondents are eliminated from the analyses if they do not report any discussants in response to the network name generator. The first column only includes respondents who supported a major party presidential candidate.

Table 2. Simultaneous effects of discussion frequency and disagreement frequency. Three-stage least squares estimates.

A. Discussion frequency as a function of disagreement frequency and exogenous variables.

	<u>coefficient</u>	<u>s.e.</u>	<u>t-value</u>	
disagreement frequency	-.21	.07	3.00	N=1124
discussant knowledge	.04	.02	1.52	s.e. of est.= .64
main respondent knowledge	-.004	.02	0.19	R <sup>2</sup> = .09
discussant interest	.08	.03	2.61	
main respondent interest	.11	.03	3.63	
main respondent education	.003	.01	0.32	
discussant education	.002	.01	0.22	
politics name generator	.01	.04	0.20	
mean discussion frequency in discussant's network <sup>a</sup>	.15	.04	4.03	
mean discussion frequency in main resp. residual net <sup>a</sup>	.35	.04	9.23	
constant	1.66	.24	6.95	

B. Disagreement frequency as a function of discussion frequency and exogenous variables.

discussion frequency	.32	.09	3.56	N = 1124
main resp. partisanship	-.01	.01	.84	s.e. of est. = .78
discussant partisanship	.00	.01	.02	R <sup>2</sup> = .09
disc. X main partisanship	-.06	.004	11.58	
percent agreement in main resp. residual net <sup>a</sup>	-.06	.06	.97	
constant	1.77	.27	6.61	

<sup>a</sup>The residual network of the main respondent is defined as all the main respondent's discussants except for the discussant in the particular dyad. The discussion frequency in the main respondent's residual network is defined in terms of the main respondent report, as is the percent agreement in the main respondent's residual network. The discussion frequency in the discussant's network is defined in terms of discussant's report regarding the frequency of discussion with each of her discussants.