Delay as Agenda Setting*

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November 2, 2009

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Abstract

In this paper we examine an environment that generates strategic delay in group decision making. Our focal setting is one in which group decisions are influenced by the independent actions of individuals who differ in their preferences and are limited by the resources they can allocate to decisions. Our analysis is sympathetic to a vision of organizational decision making that views particular decision outcomes as highly dependent on context. We focus on sources of delay caused by the strategic interaction of decision makers over time and find that the opportunity to delay decisions leads the agents to split their resources differently than they would absent the possibility of delay. Two classes of activity of this type emerge which we refer to as *focusing* and *pinning*. We also explore how strategic delay alters the benefits from agenda setting.

1 Introduction

We all have good excuses for delaying decisions: "new information is coming" or "key events will soon be resolved." Delay also results from defects in individual or group decision making processes. But while delay may often be attributed to exogenous events or negotiational frictions, the root of delay can be purely strategic.

*The authors thank Pankaj Ghemawat who was involved in early discussions about this project as well as Matt Mitchell, April Franco, and members of seminars held at HBS, Maryland, Michigan, and Toronto for helpful suggestions.

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In this paper we examine a stylized model of group decision making to answer questions about how delay affects the resource allocation strategies of decision makers and how control of the agenda affects outcomes. Our focal setting is one in which group decisions are influenced by the independent actions of individuals who differ in their preferences and are limited by the attention they can give to decisions. We focus on sources of delay caused by the strategic interaction of decision makers over time and over decisions, and rule out delay that could be generated by rational anticipation of exogenous changes or delay-inducing individual cognitive processes. Negotiational friction is incorporated into our model, but the primary emphasis is on intended frictions created through the strategic actions of decision makers.[1]

Limited attention is most consequential when decision makers simultaneously face a number of pressing decisions. In such cases decision outcomes may even depend on the characteristics of unrelated decisions that need to be resolved at the same time. A critical link across such decisions is via the various decision participants whose attention must be apportioned to the decisions at hand. Attention affects decision outcomes including delay which, in turn, becomes an instrument used by players to endogenously alter the decision agenda in the subsequent period, thereby probabilistically altering ultimate decision outcomes.

Our analysis is sympathetic to a vision of organizational decision making that views particular decision outcomes as highly dependent on context and the allocation of attention. Simon (1947, [30] p.294), for example, calls "[a]ttention...the chief bottleneck in organizational activity" and argues that "the bottleneck becomes narrower and narrower as we move to the tops of organizations..." March and Olsen (1979) [18] emphasize, along with other contextual factors, the importance in decision making outcomes of the "flow of attention" to various organizational choices and argue that this flow varies by decision makers' preferences and the available choice opportunities.[2]

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[1] We view organizational decision making as taking place within a structure of decision making routines that are designed to both expedite decision making and to prevent hasty decisions. Such routines create the opportunity for strategic delay. Our black-box treatment of direct and indecision influences, however, means that we have little to say about particular decision making processes and are agnostic about better and worse procedures.

[2] A close look at organizational decisions frequently uncovers the importance of divided attention: Redman (1973) [28] (pp. 55-57), for example, describes how an "amendment in committee" strategy for grafting a National Health Service Corps onto another health bill in 1970 was derailed because of how the U.S. invasion of Cambodia altered the legislative agenda in Congress. "The strategy's demise had been simple enough. While the events of May had occupied the *personal* staffs of the Senators, the *committee* staffs had been insulated from the barrage of visitors and

Such conditions are most commonly found in committee decision making in political and managerial settings, but are not uncharacteristic of many hierarchical settings where a superior is influenced by the advocacy of his or her various subordinates. A dominant feature of such environments is the presence of organizational politics (Pfeffer 1981 [25], Cyert and March 1963 [11], Allison 1971 [1]) and the importance of limited decision maker attention spread over a set of exogenously appearing choice opportunities (Cohen, March, Olsen 1972 [10], Kingdon 1984 [15].[3]

Our base model provides a simple structure which isolates the effect of delay while allowing considerable range for endogenous interaction. We focus on a setting in which the decision making process consists of a proposal that is either accepted or delayed in the first period and, if delayed, then is considered along with a second decision. In the second period all remaining proposals are either accepted or rejected. In each period players simultaneously allocate their influence resources for or against each available decision. The allocation of these resources and some exogenous environmental parameters determine the decision outcome. For example, conflict–opposing action–in the first period creates additional delay, whereas agreement–reinforcing action–in the first period reduces delay.

This structure best captures settings in which proposals that are passed are difficult to reverse (arguably because of resource commitments), but rejections of proposals–inaction–are easy to reverse (because there are no specific commitments attached to continuing the status quo). The U.S. legislative process with its strong status quo bias and the ability of lawmakers to reintroduce previously failed bills fits this process. But such a setting is not uncharacteristic of decision making in the firms where rejected proposals of subordinates are sometimes quietly maintained in hope that circumstances or some success will allow the proposal to be revisited. Burgelman (1991) [9], for example, chronicles an instance at Intel where the RISC processor was kept alive despite the company's explicit strategy of not pursuing such a processor. While our focus is on decision making "on agenda," the model can also

letters...As a result despite the war critics' demands, the committee staffs *had* continued 'business as usual...' the bill that we had planned to amend in committee was no longer there" because it had already been drafted, approved by committee, and sent to the Senate floor. He also discusses (p. 245) how his health service corps bill was saved for a vote because of an unrelated SST filibuster in the Senate which prolonged the legislative session: "Had it not been for the SST filibuster...the two bills would have died that day." Similarly, Wood and Peake (1998) [31] finds that presidential attention to important unresolved foreign policy issues declines when other foreign policy issues become more prominent and cite Jones (1994) for the idea that Presidents deal with very few foreign policy issues at the same time and tend to treat such issues sequentially.

[3] See Eisenhardt and Zbracki (1992) [13] for a review of these perspectives and related empirical work.

be used to explore the dynamics of whether a decision gets on the agenda in the first place. Decisions that do not make it on the agenda have not been officially killed and can therefore be interpreted as "delayed." Observers of decision making in organizations note the importance of this silent use of power.[4]

We abstract from the specifics of various decision structures and build a spartan strategic ark involving two players, two decisions, and two periods. Each player allocates a fixed per-period stock of resources (influence or attention) over the available decisions in accordance with the player's particular preferences and the anticipated strategic interacion. Two periods is the minimal time structure that can capture the effects of delay, two players is usually thought of as the fewest number needed for strategic decision conflict, while two decisions are needed to provide for allocation of attention. Players maximize their undiscounted two period payoffs which are based on their preferences regarding outcomes of each decision. Resources are assumed to be renewed each round. There is no cumulative effect over the periods and resources from one round cannot be used in another round. We model the strategic interaction as being played under conditions of complete information.

The model is quite stylized and there are many routes one could take to improve its realism. We believe, however, that the intuition regarding strategic effects of delay is generally robust and where it might not be, that the intuition will hold for at least a significant subset of decision making environments. For example, in Section 6 we show that the basic intuition from the base asymmetric model is robust to a symmetric structure in which two issues are considered in the first period where decisions can be rejected as well as accepted or delayed.

We find that the opportunity to delay decisions leads the agents to split their resources differently than they would in a single-period setting. Two main tactics emerge that we refer to as *focusing* and *pinning*. An important determinant of this allocation is the relative alignment of competitor preferences. Focusing requires alignment on at least one issue whereas the pinning incentive increases with asymmetries in preferences. As an example of a strong form of focusing, player A sometimes finds it optimal to support player B's efforts to get a proposal accepted, even though player A is against that proposal. This tactic works by getting the contentious issue off the agenda so that player B in the following period will spend all of her resources on the remaining proposal on which both of the players' interests are aligned. Effectively, player A sacrifices one proposal to *focus* agent B's attention and resources on the other proposal. Focusing also provides a time-consistent explanation for logrolling

[4]See, e.g. Pfeffer 1981 [25].

which does not rely on reputations or other outside-the-immediate-interaction considerations. *Pinning* also occurs with single-issue conflict, but is a strategy of the other player. In equilibria characterized by pinning, player B expends resources in the first period against interest to reduce the probability that the proposal is accepted (and hence will leave the agenda). B is willing to do this when the proposal is of minor importance to B but is important to A. By taking this action, B *pins* an additional amount of player A's resources on the proposal of (A's) concern, leaving less resources for agent A to fight agent B on the other proposal. In Section 5 we explore the implications of focusing and pinning for two types of agenda setting that occurs across meetings: changing the order in which issues are examined and deciding whether to examine issues in two separate meetings or in one combined meeting.

2 Background on Decision Making and Literature Review

While our model of decision making is decidedly rational, many of our key assumptions about the decision making environment come from the organizational decision-making literature that emphasizes the importance of limited attention of decision makers, where limited attention includes the possibility of limited participation on particular decisions. Interest in attention for organizational decision making is discussed in Simon's (1947) [30] classic work on administrative behavior and has been an important component of more political conceptualizations of organizations such as Pfeffer's (1978) [24] micropolitics model or the organized anarchy (garbage-can) model of March, Cohen, and Olsen (1972). For example, while noting that attention can be augmented by various actions such as buying representation and the like, March and Olsen (1979) [18] see participation in various choice decisions as dependent on organizational obligations, various symbolic aspects of decision making, and rational action regarding the allocation of attention across various alternatives.

> "There are almost no decisions that are so important that attention is assured...The result is that even a relatively rational model of attention makes decision outcomes highly contextual....Substantial variation in attention stems from other demands on the participants' time (rather than from features of the decision under study). If decision outcomes depend on who is involved..., if the attention structures are relatively permissive and unsegmented, and if individuals allocate time relatively rationally, then the outcomes of choices will depend on the availability and attractiveness of alternative arenas for activity. The individuals who end up making the decision are disproportionately those who have nothing

better to do..." (pp. 46-47).[5]

In these models various formal elements of organizational structure give individuals differing degrees of participation rights and responsibilities and different levels of information. But players within such structures still are seen as having considerable latitude in terms of the influence and attention they choose to give to any given decision. Arguably, decision making structures with these characteristics also can be found in hierarchical organizations. Bower (2005) [7], for example, describes strategy choice as a resource-allocation process in which a firm's strategy is seen as emerging from a decision making system in which upper management primarily controls organizational level decisions such as development of the overall direction of the firm or its culture, but implicitly relies on the judgment of middle managers who compete for resources to fund projects that they believe make good business sense. Decision making from this perspective is seen as "decidedly multilevel and multiperson." (Bower, Doz, and Gilbert 2005 [8], p.13).[6]

In our model delay is increased when there is decision conflict. This assumption seems particularly appropriate for environments in which decision makers favor some degree of consensus over pure formal authority or adherence to strict voting rules. Pfeffer (1981 [25], p. 155) argues, for example, that organizations value consensus because consensus improves implementation prospects and has advantages over the long term. But the push for consensus also can lead to delays in decision making which sometimes ends only when no further consensus seems likely or external timing forces a decision.[7] The positive relationship between conflict and delay is not, however, uncontroversial. Eisenhardt's (1989) [12] study of decision making speed in microcomputer firms found both examples where conflict slowed decisions – where the firms valued consensus–and where it did not. She also notes that CEOs that lack confidence in their own judgment may also slow decisions to gain more information and hear more argument.[8]

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[5] See Bendor, Moe, and Shotts (2001) [5] for a critical review of the research program surrounding the garbage-can model of organizational decision making.

[6] See also William Ocasio (1997) [23] who argues that firm behavior is the result of organizational design which shapes the attention patterns of decision makers.

[7] Bucher (1970 p. 45) "most of the opposition to an idea is worked through...or else the proposal dies"

[8] Bazerman and Moore (2009) [4], p. 50 John Wiley & Sons, discuss research that suggests that group decision making exhibits "bounded awareness" in the senses that information surfaced in group discussion has a much greater effect on

Little, if any, work has analyzed the effects of attention and delay on organizational decision making with closed-form analytical models. Our analysis connects research on influence activity and agenda setting. The influence activity models of Milgrom and Roberts (1988 [20], 1990 [21]) focus on the design of incentives to agents who, given the incentive structure, optimally split their time across current production and influence activities that impact all of the players' payoffs. Our interest in strategic delay and their interest in organizational design leads to quite different models: we build a dynamic model to explore delay, but do not address various optimal organizational designs that could structure the nature of the intra and inter-period decision-maker interactions. We take such design elements as inherited and see the elements as emerging from a much wider range of problems than contained within the scope of our model.

A wide range of agenda setting models have been analyzed in the economics and the formal political science literatures (see, e.g. Plott and Levine 1978 [26], List 2004 [17]). Agenda-setting takes place implicitly in our model because the actions by the players affect whether the decisions given in the first round remain on the agenda in the second round. Unlike the typical agenda-setting model, our focus is not primarily on how an agenda can be optimally managed by an agenda setter, but is on how the agenda is altered as the result of strategic choices and their ensuing direct decision consequences. We do consider, however, how these strategic actions affect the attractiveness of different agendas. Here, too, we differ in our focus on resource allocation which raises intrinsically cross-meeting issues whereas most of the agenda setting literature examines the effect of order on decision choices which is effectively a within-meeting focus.[9]

Finally, "Colonel Blotto" games share with our game a concern with how a fixed set of resources are split across two or more decisions (battlefields). Our model differs from the original Colonel Blotto zero-sum game and extensions of the game to more general payoffs in at least two major ways: our game is dynamic with renewed resources as opposed to being static and in our game the players, unlike in the Blotto game, are not necessarily in direct opposition to each other. Thus, the Blotto

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the decision outcome than information considered by the individual but not brought up in discussion and that pooling of information suffers in group decision making because of a group's tendency to focus on information previously known to all to the detriment of information known to one.

[9] By "effectively within meeting" we are including a series of decisions that may take place over separate meetings but which have no allocation of resources or acquisition of information (other than the results of previous decisions) that will influence outcomes.

games do not admit of efforts to further an opponent's cause, in order to get the opponent to further your cause, such as what we observe in our focusing equilibria. For some recent treatments of the Colonel Blotto game see Roberson (2006) [29] and Golman and Page (2006) [14].

3 Model

Our model consists of two players, A and B, who independently allocate their attention to influence the outcomes of two unrelated proposals, X and Y. There are two periods over which the decision can be made. The first period begins with only proposal X on the decision agenda. Proposal Y is added in the second period.

Proposals X and Y are assumed to be fixed in content. The allocation choices over X in the first period result in the proposal being accepted or delayed to the second period. In the second period the allocation choices result in proposals being either accepted or rejected. Player A has a utility u_X when proposal X is accepted and u_Y when proposal Y is accepted. Player B's utilities upon acceptance are similarly represented by v_X and v_Y. We normalize the utility given the rejection of a proposal to 0, hence the acceptance utilities are more precisely viewed as the incremental utility or disutility of accepting versus rejecting the proposal. The utility associated with each proposal is assumed independent of the outcome of the other proposal. To simplify, we also assume no discounting and that the preferences of each player are known to the other player.

In each period a player has a fixed amount of attention (resource) that she can allocate to influence the outcome of the proposals so as to maximize the undiscounted two-period sum of her expected utilities. Rather than model allocation of attention directly, we instead treat each player as choosing probability influence increments. For example, when both proposals are on the agenda, player A chooses probability increments a_X and a_Y and B chooses b_X and b_Y. When only proposal X is on the agenda, A only chooses a_X while B chooses b_X. A player supports a proposal when she chooses a positive probability increment and is opposed when she chooses a negative increment. We assume that each player's allocations have a direct effect which is linear and additive. In addition to being easy to calculate, this structure has the advantage of isolating the across-period strategic effects as additivity eliminates single-period strategic interaction. Influence is neither cumulative nor storable across periods. Thus, if proposal i is on the agenda, the probability the proposal is accepted is

$$p_i = z_i + a_i + b_i \tag{1}$$

where z_i is a shifter that captures exogenous factors that affect the probability of acceptance. We differentiate actions taken in the first period from those taken in the second period by using lower case as opposed to upper case proposal-identifying subscripts. Thus, a_x and a_X are, respectively, player A's first and second period allocations on issue X.

To capture the notion that total influence is bounded in a multi-issue setting, we assume that there is a probability influence frontier g:

Condition 1 *Influence choices must satisfy* $|a_y| \leq g(|a_x|)$ *for* $a_x \in [-\bar{p}, \bar{p}]$*, where the probability frontier* g *satisfies (i)* $g(0) = \bar{p}$*, (ii)* $g(\bar{p}) = 0$*, (iii)* g *is symmetric around* 0*:* $g(a_x) = g(-a_x)$*, (iv)* g *is symmetric around the* $45°$ *line:* $a_y = g(a_x) \Leftrightarrow a_x = g(a_y)$*, (v)* g *is decreasing and concave over the interval* $[0, \bar{p}]$*, and (vi)* $g'(0) = 0$ *and* $g'(\bar{p}) = -\infty$*.*

Intuitively, this is a resource constraint with the maximum probability influence on a single issue equal to $\bar{p}$. The assumed properties for the frontier can be derived as endogenous properties for an underlying model of effort choice in which additional effort yields a diminishing marginal effect on probability and the agent is equally effective at influencing one issue or the other. We can relax these assumptions, whenever desired, by examining the limiting cases of a straight-line resource constraint or a right-angle one (these will often yield corner solutions for influence allocation). The advantage of the frontier structure embodied in g is that influence allocation choices in a multiple issue setting are always interior to the interval $(\bar{p}, \bar{p})$. We can see this in the figure, which illustrates choices relative to the "influence circle." Of course, the region in the figure in not literally a circle (except in the special case of $g(a) = \sqrt{\bar{p}^2 - a^2}$ which we will employ in our examples). Depending on whether the player wants to support or oppose issues, we will always be able to characterize the choices in terms of a tangency between the influence circle and a benefit ratio.

In general we focus on interior settings where players do not have resources that are sufficient to remove all uncertainty: for any choices (a_X, a_Y) and (b_X, b_Y), we have interior probabilities p_X and p_Y. The following condition is assumed to prevent corners when only one issue is on the agenda.

Condition 2 *Assume that* $2\bar{p} < z_i < 1 - 2\bar{p}$ *for* $i = X, Y$ *(feasible influence choices never lead to deterministic outcomes)*

In the first period there is no reject possibility, so the probability of delay is $1 - p_x$. In the second period, there is no delay state, so the probability of a rejected proposal i is just $1 - p_i$. Restricting

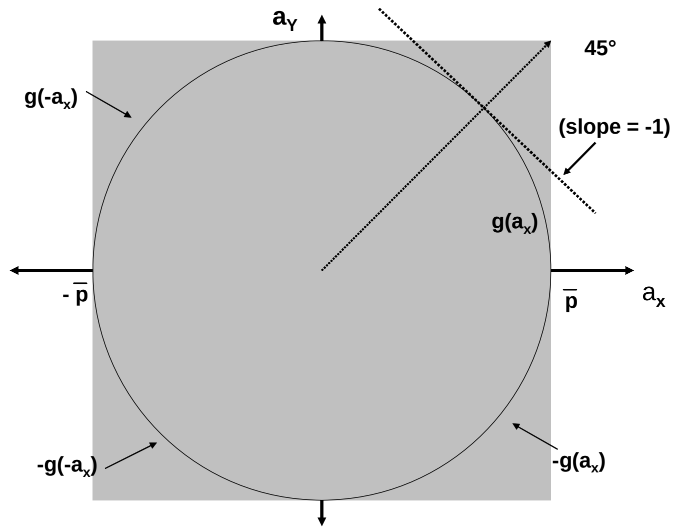

Figure 1: Influence 'Circle'

the first period outcomes to either accept or delay simplifies the analysis, allowing us to obtain more powerful and transparent results and to analyze active agenda setting.[10] In Section 6 we analyze a model which adds a reject possibility to the first period and find analogous results.

3.1 The Static Equilibrium Benchmark

We begin our analysis by considering the optimal actions for the players in the second period. This analysis provides both a building block for the dynamic analysis and a benchmark setting in which strategic interaction is eliminated between players A and B.

The optimal actions for players in the second period depend on whether issue X was delayed from period 1. We begin with the simplest case of one issue Y where each player's payoff (u_Y for player A and v_Y for player B) for acceptance is positive so that the players have common interests over Y. The probability of Y is given by

$$p_Y = z_Y + a_Y + b_Y \tag{2}$$

where $z_Y > 0$ is an exogenous shift effect and players A and B can influence the probability of Y by choosing a_Y and b_Y, respectively, and where each choice is an element of $[-\bar{p}, \bar{p}]$. Given the linear

[10] When there is only one issue in the first period, we do not have to worry about the the tradeoff between issues that is associated with the g function and relative expected payoffs to each issue.

structure of the influence probabilities, z plays an inessential role regarding incentives, but is included for convenience to avoid nonnegative net influence probabilities.[11] Assume that $2\bar{p} + z_Y < 1$ and $z_Y - 2\bar{p} > 0$ (Condition 2 above) so that the trivial case of a certain outcome is not possible. Clearly, each player will choose $\bar{p}$ so that the chance of Y occurring is maximized (this is a dominant strategy with $u_Y > 0$ and $v_Y > 0$). The resulting payoffs associated with Y are then given by

$$\begin{aligned} U_Y &= u_Y (z_Y + 2\bar{p}), \\ V_Y &= v_Y (z_Y + 2\bar{p}). \end{aligned}$$

Of course, if the players have opposing interests, then they will take offsetting actions. Suppose that $u_Y < 0 < v_Y$. Then, we can apply the above choice framework and the only change is that we now have $a_Y = -\bar{p}$, so that player A tries to minimize the chance of Y occurring. The outcome is that the influence choices now cancel each other and result in payoffs

$$\begin{aligned} U_Y &= u_Y z_Y, \\ V_Y &= v_Y z_Y. \end{aligned}$$

Now consider 2 players, A and B, and 2 issues, X and Y–that is, issue X had been delayed from the first period. We begin with the simplest case where both issue payoffs are positive for each player. Thus, $u_X > 0$ and $u_Y > 0$ for player A and $v_X > 0$ and $v_Y > 0$ for player B. We solve for a Nash equilibrium where each player chooses their own probability influence on each of the two issues.

Given an influence choice by player B, say b_X and b_Y, player A's problem is to choose influence levels to

$$\max_{a_X, a_Y} u_X [z_X + a_X + b_X] + u_Y [z_Y + a_Y + b_Y]$$

for feasible influence levels relative to the probability frontier, $a_Y = g(a_X)$ for $0 \leq a_X \leq \bar{p}$ (negative influence levels are never optimal in this case). Since the actions of player B only have an additive effect on this payoff, just as the exogenous z effects do, the optimal choice by player A is given by

$$-\frac{u_X}{u_Y} = g'(a_X^*) \tag{3}$$

on issue X and $a_Y^* = g(a_X^*)$ on issue Y. See Figure 2.

Similarly, player B chooses influence levels given by

$$-\frac{v_X}{v_Y} = g'(b_X^*) \tag{4}$$

[11] It might be interesting to explore how a z interaction with a and b would affect choices.

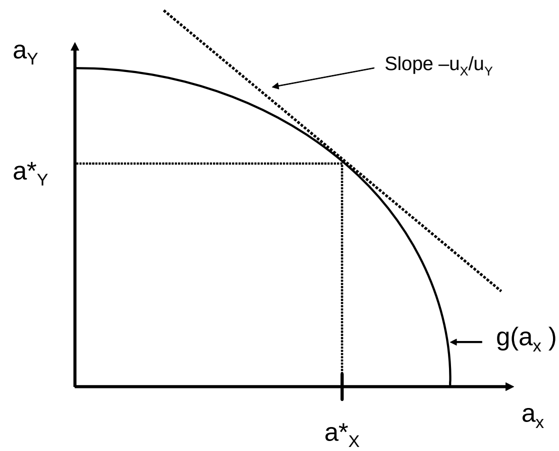

Figure 2: Optimal Static Influence Levels

on issue X and $b_Y^* = g\left(b_X^*\right)$ on issue Y. Thus, the static benchmark has no strategic interaction between the players. Precisely because the other player's action does not impact the marginal benefit of one's own action, the two players optimize independently of each other. This is just as it was in the single issue case although there each player is always at a corner solution.

Critically, however, a player's payoff does depend on the actions of the other player. This is the channel for generating dynamic strategic effects in our model. Anticipating that in the future another player will support or oppose an issue that remains unresolved, there is an incentive to take action today to influence the other player's future move. To analyze this channel, we need to calculate the payoff outcomes for the simple static Nash equilibrium:

$$\begin{aligned} U_{XY} &= u_X\left(z_X + a_X^* + b_X^*\right) + u_Y\left(z_Y + a_Y^* + b_Y^*\right), \\ V_{XY} &= v_X\left(z_X + a_X^* + b_X^*\right) + v_Y\left(z_Y + a_Y^* + b_Y^*\right). \end{aligned}$$

When the players' interests are not perfectly aligned across issues, one or more payoffs are negative. A small variation on the above analysis provides the benchmark outcome. Suppose that $u_X < 0 < u_Y$ for player A while player B continues to favor both issues. Clearly, player A will want to reduce the likelihood of X. Thus, we view $-a_X \in [0, \bar{p}]$ and the previous formulas are modified to

$$\frac{u_X}{u_Y} = g'(-a_X^*) \quad \text{and} \quad a_Y^* = g\left(-a_X^*\right) \tag{5}$$

so $a_X^* < 0$. Payoffs for the two players are then given by the above formulas for U_{XY} and V_{XY}, as the sign of each influence choice will reflect the payoff effect. Other combinations of player interests are obtained as straightforward variations.

Note that we have found a Nash equilibrium for the static game. This is because when each player chooses optimally, (a_X^*, a_Y^*) by A and (b_X^*, b_Y^*) by B, we have an outcome where each player is at a best response to the other's choice. More precisely, each player's choice constitutes a dominant strategy. The absence of strategic interaction in the static game makes it possible to isolate the dynamic structure as the driving force behind the emergence of strategic effects. Summarizing the above analysis we have:

Lemma 1 *When $u_X, u_Y, v_X,$ and v_Y are all positive, the static Nash equilibrium strategies when both proposals X and Y are on the agenda are characterized by (3) and (4). When only Y is on the agenda, both $a_Y^* = b_Y^* = \overline{p}$.*

Other combinations of preferences are handled as minor variations of this characterization where adjustments are made to ensure the correct signs of the actions according to the influence circle figure above.

3.2 Dynamic Equilibrium Choice

The optimal static equilibrium strategies given by Lemma 1 are also the optimal second period equilibrium strategies. We now turn our attention to an analysis of the first-period actions.

From our benchmark analysis of the static case, we have the continuation payoffs for the players and probabilities for period 2 across the two possible states according to whether proposal X was delayed to the second period. The probabilities of each state are given by:

$$\begin{aligned} &\{Y\} \quad \text{with } p_X, \\ &\{X, Y\} \text{ with } (1 - p_X). \end{aligned}$$

The payoff for player A at a candidate set of period 1 choices is then given by the sum of the expected period 1 and 2 payoffs:

$$U^a \equiv (z_X + a_x + b_x)\,[u_X + U_Y] + (1 - (z_X + a_x + b_x))U_{XY} \tag{6}$$

Similarly, for player B we have

$$V^b \equiv (z_X + a_x + b_x)\,[v_X + V_Y] + (1 - (z_X + a_x + b_x))V_{XY} \tag{7}$$

The incentive for player A for allocating influence in period one is:

$$\frac{\partial U^a}{\partial a_x} = u_X + U_Y - U_{XY} \tag{8}$$

and similarly the incentive for player B is:

$$\frac{\partial V^b}{\partial b_x} = v_X + V_Y - V_{XY} \tag{9}$$

Characterization of the best responses of each player and the equilibrium strategies require additional structure regarding preferences. In the next section we propose a set of generic conflict and agreement settings which we analyze.

4 Player Preferences and Strategic Delay

The advantages and disadvantages of delay depend on the nature of conflict between the two players in the model. There are three canonical settings regarding the direction of conflict: *pure conflict* where the players have opposed preferences over both issues, *pure agreement* where the players preferences are directionally aligned, and *partial conflict* where the players' preferences align on one issue, but conflict on the other. Within these situations, of course, there is a wide range of variations regarding the relative intensities of conflict or alignment.

Each player has preferences over the two issues X and Y that can categorized into whether the player is for or against the issue. In terms of conflict, there are many directional preference combinations, though many of them do not differ in any economically material way.[12] Our analysis focuses on the most interesting combinations of preferences. The most interesting strategic interactions involve some level of conflict. Therefore, we begin discussion with the partial conflict setting. Then we briefly extend our analysis to characterize similar interactions that occur in pure conflict and pure agreement settings. Analysis of pure conflict and pure agreement cases are simple extensions of the partial conflict analysis and it is not necessary to have conflict to obtain the focusing outcome we discuss below.

[12] There are four cases of pure conflict preferences (e.g., $u_X > 0, v_X < 0; u_Y > 0, v_Y < 0]$), four in which there is no conflict, and eight with partial conflict (e.g. $u_X > 0, v_X > 0; u_Y > 0, v_Y < 0$).

4.1 Partial Conflict and Focusing

In a partial conflict setting, players agree on one proposal but disagree on the other. The strategic dynamics of the *partial conflict* setting can be captured with player A and player B in conflict over the first issue X, but in alignment over the second issue Y. We focus on the partial conflict over X case.

Case 1 ***Partial Conflict over the first issue*** X***:*** $v_X > 0 > u_X$, $u_Y > 0$ *and* $v_Y > 0$.

The first step of the analysis is to determine the optimal second-period allocations of attention. Using the static benchmark analysis above, if only Y is on the second-period agenda, then $a_Y = b_Y = \bar{p}$, so $U_Y = (z_Y + 2\bar{p})u_Y$ and $V_Y = (z_Y + 2\bar{p})v_Y$. If the agenda includes both X and Y, then a_X^* and a_Y^* and b_X^* and b_Y^* are given by applying Lemma 1 with appropriate adjustment of signs. Then $U_{XY} = u_X(z_X + a_X^* + b_X^*) + u_Y(z_Y + a_Y^* + b_Y^*)$ and $V_{XY} = v_X(z_X + a_X^* + b_X^*) + v_Y(z_Y + a_Y^* + b_Y^*)$.

The next step is to analyze the first-period optimal allocations. The linear structure of influence implies that the objective function for players A and B are maximized by allocating all influence on issue X if and only if $u_X + U_Y - U_{XY} > 0$ and $v_X + V_Y - V_{XY} > 0$, respectively.[13] See (8) and (9). We use these relationships to determine the optimal first-period allocations.

Lemma 2 *Suppose that $v_X > 0 > u_X$, $u_Y > 0$ and $v_Y > 0$. Then player B's optimal first period allocation b_x is $\bar{p}$.*

Under the assumed preferences, Lemma 2 shows that B's long-run interest coincides with B's static interests. If B were to use negative influence, she would increase the probability that issue X will be delayed rather than passed in the first period, which is costly. The effect in the second period would also be negative as there would now be a higher probability that both X and Y are on the agenda. Since A is against X, in the second period A would fight against B in the second period on issue X and use less of his attention on issue Y over which their interests align.

Now consider the first-period choice faced by player A. A has a direct incentive to go negative against X in the first period since that effectively reduces the likelihood that X is accepted (in the first or second periods). However, if X is off the table in the second round, player B will allocate all

[13] The easy-to-analyze corner solution is a benefit of restricting the first-period agenda to a single issue. With multiple first-period issues we would have to consider efficiency allocation tradeoffs based on the production function (g function) of effectiveness.

of its attention to the remaining issue Y which both agree on. This incentive to *focus* player B's attention on issue Y may be optimal if A's intensity of preference is greater for issue Y than issue X.

Definition 1 *(Focusing) A player focuses his rival on proposal j when the player's first-period allocation on i is greater than his static optimal allocation.*[14]

Intuitively, the incentive to focus depends not only on A's relative intensity of preference of Y compared to X, it also depends on the incremental gains A obtains from B through shifting B's attention from both X and Y to only Y. If, for example, B also cared much more about issue Y than issue X, the gain to focusing B on issue Y would not be great, as B would have been relatively focused on Y regardless. This logic suggests that the incentives for focusing can be fruitfully characterized as a function of the ratios of the preference intensities for X to Y. As a convention we will measure the preference ratio for each player as positive numbers, i.e., $u \equiv |u_X/u_Y|$ and $v \equiv |v_X/v_Y|$.

Proposition 1 *Suppose that $v_X > 0 > u_X$, $u_Y > 0$ and $v_Y > 0$. For any preference ratio v for player B, there exists a focusing cut-off preference ratio $\overline{u}_F$ below which in equilibrium it is optimal for player A to choose $a_x = \bar{p}$ and above which $a_x = -\bar{p}$. (See Appendix for Proofs)*

Proposition 1 establishes that there is always a region of preferences for A and B in which A will choose to focus player B. In this region, the focusing player will help its rival to accept a first-period issue that the focusing player dislikes in order to get the rival to focus its entire attention on the second-period issue over which the two players have aligned preferences. An extreme case of focusing would occur where B's preference ratio is very large–that is B cares quite a bit more (relatively) about issue X being accepted than issue Y being accepted, while A's preference ratio is very small. In this extreme case B will allocate very little attention to issue Y if both issues X and Y are on the agenda in the second period. By helping to remove X, player A increases the probability that only Y will be on the agenda in the second period and, hence, that B will devote its entire attention to Y, the issue that player A cares about the most.

We now develop an example with a preference structure that we will use in most of the examples throughout the remainder of the paper.

[14] This definition of focusing has the virtue of being simple, but will need to be expanded to accommodate symmetric model that is described in Section 6.

Example 1 *(Integrated Example–Proposal X to Proposal Y): Suppose that resources are traded off according to* $g(a,\bar{p}) = \sqrt{\bar{p}^2 - a^2}$ *with* $\bar{p} = 0.1$, $z_i = 0$, *and let the preferences be*

Preference Structure	*Player A*	*Player B*
Issue X	$\boldsymbol{u_X = -0.075}$	$v_X = 1$
Issue Y	$u_Y = 1$	$v_Y = 0.075$

Then the equilibrium allocations will be

Eq Alloc	*1st period*	*2nd* $\{Y\}$	*2nd* $\{XY\}$
Issue X	$\boldsymbol{a_X = 0.1}$	*NA*	$a_X = -.07$
	$b_X = 0.1$	*NA*	$b_X = 0.99$
Issue Y	*NA*	$a_Y = 0.1$	$a_Y = 0.99$
	NA	$b_Y = 0.1$	$b_Y = 0.07$

In this example both players are strongly concerned about the outcome of one proposal, but not the other and the primary focus for one player is the secondary proposal for the other. Thus, the intensity ratio v for player B is large which means that B when faced with both proposals in the second period would allocate most of her resources on proposal X. Player A, therefore, receives a large incremental benefit from focusing B on issue Y. Of course, player A's low intensity of preference on proposal X makes it less costly to support proposal X against his static interest. In the example, player A's payoffs increase about five percent through the focusing strategy versus a myopic follow-preferences strategy. However, player B receives a substantial boost from A's focusing strategy: the gain is between two and a half and three times the myopic strategy payoffs.

The following example provides a different preference structure from Exercise 1 that also generates focusing. Here the focused player (B) has equal preferences over the two proposals and there is an intrinsic bias towards passing both proposals.

Example 2 *Suppose that resources are traded off according to* $g(a,\overline{p}) = \sqrt{\overline{p}^2 - a^2}$, $z_X = z_Y = 0.4, \overline{p} = 0.2$, *and let* $u_Y = v_X = v_Y = 1$. *Then* $\overline{u}_F = -0.125$, *so that* $a_x = -\bar{p}$ *for* $u_X < \overline{u}_F$ *and* $a_x = \bar{p}$, *otherwise. Player B chooses* $b_x = \bar{p}$. *If both issues X and Y are on the agenda in the second period, player B splits his effectiveness allocation equally (i.e.* $B_X = 0.14$ *and* $B_Y = 0.14$*) while player A will divide its allocation according to* $A_X = \frac{-u_X}{\sqrt{u_x^2+1}}$ *and* $A_Y = \sqrt{\overline{p}^2 - A_X^2}$.

When one moves from a single issue to a multiple-issue first-period setting, the incentives of the first-period choices strategically interact leading to a more subtle set of incentives than in our base model. The incentive for focusing remains, but it is less dramatic than that forced by our base structure in which optimal first-period choices are cornered. The basic intuition of focusing will also apply, albeit more subtly, to sequential decision settings with more than two issues. We take up this issue in Section 6.

As the relative intensity of player B is increasingly weighted towards issue X, the value of focusing increases because the difference in how B would allocate its resources towards issue Y in the Y only state versus the X and Y state increases.

Proposition 2 $\overline{u}_x(v)$ *is increasing in* v.

Because the payoff to focusing comes from gaining assistance from one's rival in the second period, it seems plausible that preference alignment is a necessary condition for focusing.

Proposition 3 *Focusing can only occur when both players' preferences are aligned over the issue* Y *that is first introduced in the second period.*

Proposition 3 establishes that preference alignment on issue Y, the issue introduced in the second period, is necessary for a focusing equilibrium. Focusing reduces the probability that issue X will be on the second-period agenda. This increases the probability that the second-period agenda will consist of issue Y alone and decreases the probability of both X and Y together. Alignment over Y makes an agenda with Y alone attractive to the focusing player whereas when there is conflict over Y the Y-alone agenda is relatively unattractive.

Efficiency effects of focusing Focusing is inherently a "cooperative" strategy as the focusing player assists the other player in the first-period anticipating increased assistance from the other player in the second period. We can assess the efficiency of focusing by determining, first, how the focusing equlibrium performs relative to an appropriately-defined social optimum (i.e., the maximum additive social surplus of the players) and, second, whether the focusing equilibrium is Pareto-efficient. A focusing equilibrium cannot reach the welfare optimum (except for trivial cases) because in the second period (given Condition 2) there is always a positive probability of a state outcome in which both issues are on the agenda. In that state, conflict over issue X causes players to expend resources for and against X that wastefully offset each other. A social planner could improve additive social surplus by reallocating those offsetting resources to issue Y over which both players are aligned. Thus, focusing does not achieve social efficiency or Pareto efficiency.

Finally, we can ask how focusing does relative to allocations where both players allocate their resources according to static considerations. Here it is easy to see that focusing is an efficiency improvement versus the static benchmark. Clearly, the focusing player is better off since focusing is an optimal strategy for that player relative to the static resource allocation. The focused player is essentially choosing its static optimal outcomes and all is the same except that the other player is increasing the probability that a favored issue is accepted in the first period. One interpretation of focusing is that it is endogenous incentive-compatible log-rolling.

The analysis of the *Partial Conflict -X* case illustrates how the dynamic incentives for delay play out in one particular, but important, set of preferences. The analysis extends easily to the case where the alignment on issue Y is reversed (e.g., $v_X > 0 > u_X$, $u_Y < 0$ and $v_Y < 0$) because the marginal benefits from negative influence –leading to rejection–are symmetric with the marginal benefits from positive influence leading to acceptance. It also directly covers the cases where the player labels are reversed.

4.2 Partial Conflict and Pinning

In the previous subsection we explored the impact of partial conflict when the conflict concerned the first issue X. We now consider a setting that is exactly analogous to that analyzed above, except that the preferences for issues X and Y are reversed. The conflict is now over the second issue Y (with alignment over issue X). Note that by Proposition 3 focusing cannot occur with this configuration of preferences.

Case 2 ***Partial Conflict – Proposal*** *Y: $v_Y > 0 > u_Y$, $u_X > 0$ and $v_X > 0$*

In this case the issue over which there is directional agreement is handled first. If player A followed its natural preferences, it would support issue X in the first period. However, we shall see that dynamic considerations will sometimes cause A to oppose X in the first period to improve the strategic situation in the second period. Essentially, A works to keep issue X on the agenda because of issue X's importance to player B. If both X and Y are on the agenda in period two, B will allocate attention to issue X which reduces B's ability to effectively oppose A on issue Y (over which they conflict). *A pins B* to an issue that B cares alot about.

Definition 2 *(Pinning) A player pins her rival to proposal i when the player's first-period action is less than the player's static optimal action.*

Analogous to the case in the focusing analysis, player A's decision to go against her natural preference depends on the relative strengths of the incentive to accept issue X and the dynamic benefits of pinning player B to issue X by delaying it to the second period.

A chooses a_x to maximize $(z_X + a_X + b_X)(u_X + U_Y) + (1 - (z_X + a_X + b_x))U_{XY}$ where $u_X + U_Y$ captures the value of accepting X in the first period and U_{XY} the value of delaying X to the second period. It is clear from the objective function that $U_{XY} > u_X + U_Y$ is a necessary and sufficient condition for $a_x = -\bar{p}$ (which goes against A's natural preference).

Because there is conflict over Y, $U_Y = z_Y u_Y$. U_{XY}, of course, depends on the optimal static allocations (see Lemma 1) which are affected by the relative preference ratios u and v over issues X and Y. Following a similar solution approach as above, we show that there exists a cutoff preference ratio below which pinning is optimal.

Proposition 4 *Suppose that $v_Y > 0 > u_Y$, $u_X > 0$ and $v_X > 0$. For any preference ratio v for player B, there exists a pinning cut-off preference ratio $\overline{u_p}$ below which it is optimal for player A to choose $a_x = -\bar{p}$ and above which $a_x = \bar{p}$.*

The benefits of pinning will increase as B places more weight on issue X, i.e., as v increases. This makes pinning more attractive for a wider range of player A preferences. Thus we have

Proposition 5 *$\overline{u}_p$ increases with v.*

Proposition 6 *Pinning can only occur when both players' preferences conflict over an issue that may be alone on the agenda in the second period.*

Proposition 6 establishes that preference conflict on issue Y, the issue introduced in the second period, is necessary for a pinning equilibrium. Pinning increases the probability that issue X will be on the second-period agenda. This decreases the probability that the second-period agenda will consist of issue Y alone and increases the probability of both X and Y together. Conflict over Y makes an agenda with Y alone unattractive to the pinning player.[15]

[15] Double pinning may not be possible (TBD): Use symmetric 45 degree line preference case to illustrate why can't both be pinning with symmetric preferences. Conflict over Y implies that there is no gain to either the Y or XY state for issue Y and the gain to state XY in the X issue is less than the cost of going against preference and delaying instead of passing X.

We use the same preference structure in Example 1 described above to illustrate pinning. We can get the proper preference order to generate pinning by considering an example where we reverse the order of appearance of proposals X and Y. So now the first issue on the agenda is proposal Y and proposal X is added in the second period. In this new ordering of the agenda, player B has the weak preference over the first proposal and, with these preferences, will pin player A to proposal Y in the second period.

Example 3 *(Integrated Example–Proposal Y to Proposal X): Suppose that resources are traded off according to* $g(a, \bar{p}) = \sqrt{\bar{p}^2 - a^2}$ *with* $\bar{p} = 0.1$, $z_i = 0$

Preference Structure	*Player A*	*Player B*
Issue Y	$u_Y = 1$	$\boldsymbol{v_Y = 0.075}$
Issue X	$u_X = -0.075$	$v_X = 1$

Eq Alloc	*1st period*	*2nd* $\{X\}$	*2nd* $\{XY\}$
Issue Y	$a_Y = 0.1$	*NA*	$a_Y = 0.99$
	$\boldsymbol{b_Y = -0.1}$	*NA*	$b_Y = 0.07$
Issue X	*NA*	$a_X = -0.1$	$a_X = -0.07$
	NA	$b_X = 0.1$	$b_X = 0.99$

Player B receives slightly more than a five percent increase from pinning versus following a myopic follow-interest strategy. The pinning strategy, however, greatly reduces player A's payoff relative to that which would have been received if B acted myopically.

A pinning strategy is inherently defensive. Therefore, given opposition in the first period on the issue over which both players align, pinning equilibria are not socially efficient. Pinning equilibria are not pareto-efficient by the same argument used above to show that focusing is not Pareto-efficient. Namely, the second period state when both issues X and Y are on the agenda will involve wasteful offsetting resource use on issue Y. These resources can be reallocated to issue X over which both players align. Finally, unlike the focusing equilibria, pinning equilibria are not Pareto-improving versus static allocations. While the pinning player's expected utility is improved, the pinned player's utility declines.

4.3 Focusing and Pinning with Pure Conflict or Pure Agreement

4.3.1 Pure Agreement

Although focusing requires alignment of preferences over the second issue (Y), it is not necessary that there be conflict over the first issue. This is because the benefits of focusing come from taking issue X off the agenda and is greatest to a player when it has a preference intensity ratio strongly favoring Y while the other player does not. Consider, for example, a preference relationship in which both players are against both issues. If u is small and v is large, an A allocation consistent with static interests would be to delay X by choosing $-\bar{p}$. But by instead choosing $\bar{p}$, issue X is more likely to be accepted and disappear from the agenda, which would lead player B to allocate its entire attention to issue Y.

4.3.2 Pure Conflict

Pinning can also occur in settings involving pure conflict. Consider a preference relationship in which player A prefers to accept both issues whereas player B prefers to reject both issues. When, for example, A's preference intensity ratio heavily favors issue Y while player B's intensity ratio heavily favors issue X, it is optimal for player A to act against static interest by delaying issue X (which is weakly liked) and, by so doing, increase the probability that player B will be pinned to issue X in the second period, thereby decreasing the force of player B's attention against issue Y. It is easy to see how this would work in a limiting case where $u_X = +\epsilon$ and $u_Y >> 0$ while $v_x << 0$ and $v_Y = -\epsilon$. Player A's static optimal action when only X is on the agenda would be to choose $a_x = \bar{p}$. We argue that it would be dynamically optimal for A to choose instead $a_x = -\bar{p}$. As described above, this latter action is optimal iff $u_X + U_Y < U_{XY}$. As $\epsilon \to 0$, this inequality becomes $u_X + z_Y u_Y < (z_X - \bar{p})u_X + (z_Y + \bar{p})u_Y$ which is clearly satisfied.

5 Agenda Setting (In Progress)

In this section we explore the implications of focusing and pinning strategies on agenda selection. An agenda can be manipulated in a wide variety of ways, for example, by choosing the order in which issues are decided or by deciding if issues are considered in the same or different meetings. We capture some of these aspects of agenda setting by examining the relative attractiveness of agendas that (a) differ by the *order* in which issues are decided and (b) that differ in whether issues are decided *sequentially* or *simultaneously*. Because our focus is on the strategic use of resources to influence decisions, the timing we have in mind is not the immediate order of decisions within any given meeting but rather whether an issue is considered in one meeting or in a different meeting.

It should be kept in mind that decision situations are rarely fully malleable to changes in the agenda. Timing frequently reflects some underlying flow of relevant information that provides a natural ordering to decisions or perhaps that one proposal is clearer in its likely parameters at an earlier time than other proposals. In principle, one could augment our analysis with costs of changing the order of the decisions or in delaying or expediting them. Here, however, we ignore these considerations.

The analysis of the benefits of agenda setting has the potential to provide insight into questions relating, for example, to the efficiency of various agenda orderings. agenda preferences given various preference configurations, and the value of rules that constrain agenda control

5.1 Normal, Reverse, and Simultaneous Agendas

We label an agenda in which issue X is introduced in the first period and Y in the second period as the "normal" agenda. An agenda where theissues are reversed so that Y is introduced in the first period will be referred to as a "reverse" agenda. The analysis of the reverse agenda is exactly analogous to that for the normal agenda with a_Y and b_Y as first period choices and U_X and V_X as the static payoffs for player A and player B, respectively, when only X is on the agenda in the second period. A simultaneous or compressed agenda is a decision process in which both issues are resolved at a single decision point. There are many ways this type of agenda can be modeled. To make a relatively neutral comparison with the sequential choice settings, we model a compressed agenda as a process in which resource choices are made in each of two periods, but the effect of the "first" period choices occurs at the "second period" decision point. This structure means that the same basic resource constraints and influence technologies are at play in all agenda settings.[16]

Making comparisons associated with reordering the decisions in sequential agendas is tricky because

[16] Even with separate allocations over two periods, however, the compressed agenda is still different from the sequential agendas in that the sequential agenda structure is more limiting in terms of the effective amount of resources one can overall allocate to an issue. For example, consider the joint probability of passing an issue that is on the first period agenda in a sequential agenda. If the single-period maximum allocation is 0.2, then under the compressed agenda, a player can allocate resources that increase the probability of passage by 0.4. Under a sequential agenda, the maximum effectiveness would be $0.2 + 0.2$ * (probability that the issue is on the second-period agenda).

of the additional first-period resources that are available to influence the first issue but not the second.[17] This difference in resources is natural as a decision that is scheduled earlier in a decision sequence and that can be delayed is in a different resource situation than a later decision. It is important to keep this potential resource asymmetry in mind when interpreting the results.

5.2 The Value of Agenda Setting

To set the stage for the analysis to follow, consider briefly a sequential agenda setting in which both players have the same strong positive preference on issue X and the same positive, but weaker, preference on Y. Because players can allocate more resources on the first issue than on the second, it is easy to see that both players would prefer the normal agenda (issue X before issue Y) over the reverse agenda.[18]

This argument suggests that an agenda setter's ordering preference will be strongly affected by both the intensity and direction of the agenda setter's preferences over the issues. For example, if the agenda setter (A) cares intensely and positively about issue Y, this is a strong factor in favor of reversing the agenda (putting Y first). By making issue Y the first decision, the agenda setter can allocate more resources to Y overall. In what follows we build on this logic and demonstrate an important case in which the logic fails.

For the purposes of discussion we again focus on the case of partial conflict. Let players A and B have conflicting preferences over issue X and aligned preferences over issue Y. Now consider the preferences for players A and B which correspond to case 1 (both players align over the second issue Y and conflict over the initial issue X, i.e., $u_X < 0$, $u_Y > 0$, $v_X > 0$, and $v_Y > 0$). By Propositions 3 and 6 such preferences are necessary for focusing in a normal agenda and for pinning in a reversed agenda.

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[17] Although we treat the actions of the decision makers symmetrically across agenda settings, we also need to decide how to handle the exogenous z influence. Our primary approach is to set $z = 0$ in the "first period" of a compressed agenda. Note that the effects of reversing issue order are not symmetric with intensity of preference, as the base model favors positive first issue preferences over negative first issue preferences.

[18] This result is somewhat artificial as the seond issue is forced to be resolved in the second period and cannot be "carried over" in the same way the first issue could be carried over. Some degree of asymmetry is not uncommon in decision settings that involve "resetting" (such as Congress) due to the end of a decision cycle.

5.2.1 Agenda Setting as Direct Focusing

Suppose that the preferences over issues X and Y lead to focusing in a normal (X first) agenda. Then, A spends against interest in the first period to get issue X off the agenda in which case B will support A's primary issue Y. But if player A is the agenda setter, A might prefer to reverse the order of the agenda. By putting Y first, there will be two opportunities for A (and B) to pass Y which both decision makers favor. Changing the order might be thought of as a direct form of focusing that can be implemented through agenda setting.

But the analogy to focusing does not always hold. If all players follow their preferences reversing the agenda seems optimal for A. But by switching Y into the first period, dynamic considerations now become relevant. Under the assumed preferences, we know from Proposition 3 that focusing will not occur as the players disagree on the now second issue X. Thus, the source of a possible dynamic problem comes if Player B acts against interest to pin player A to issue Y which, in turn, means that the first-period actions of A and B will cancel, eliminating the value of moving Y to the first period (except for any exogenous positive push via z). Futhermore, in the second period the two players will more often be working at cross-purposes. Proposition 4 establishes conditions under which reversing the agenda is beneficial to the agenda setter.

Conjecture 1 *If reversing the agenda does not result in pinning, an agenda setter that would have adopted a focusing strategy with a normal agenda will prefer a reverse agenda. (TBD)*

Consider the Integrated Examples 1 and 3 that were developed in the previous section. In those examples, the preferences were selected to produce focusing by A in a normal agenda and pinning by B in the reverse agenda; Player A strongly prefers issue Y and is weakly against issue X while player B strongly prefers X and weakly prefers Y (with the same relative intensity as player A). The individual payoffs associated with those examples are given in the Table below. For comparison, we also provide the payoffs to a (disequilibrium) myopic set of strategies in which each player merely allocates according to his static self-interest.

Example 4 *Payoffs to Integrated Examples 1 and 3 under normal and reversed agendas*

Agenda	*Strategy*	A *payoff*	B *payoff*
Normal (Ex. 1)	*A focuses B*	*0.105*	*0.283*
	myopic	*0.100*	*0.100*
Reverse (Ex. 3)	*B pins A*	*0.100*	*0.100*
	myopic	*0.280*	*0.095*

In both of these examples, the incentives for focusing and pinning for the "strategic" player are modest, but the effects of those actions on the nonstrategic player are great. In the normal agenda the focused player (B) is the big winner. She gets A's affirmative help on her primary issue. Thus, if B is the agenda setter, she will have a big incentive to choose the normal agenda, anticipating that A will act strategically to focus her in the second period. If, for some reason, A chose the suboptimal "myopic" strategy, B still gets the same payoff as it would get under the best reverse agenda setting.

What agenda will A choose if he is the agenda setter? The direct focusing analysis above suggested that there is a strong force pushing A to move its greatly preferred issue, X, to the first period and if B acted in her short-run (myopic) interest, reversing the agenda would hugely improve A's expected payoffs. But, when faced with this reverse agenda, player B recognizes her incentive to pin A and reduce the probability that the only issue on the agenda in the second period is her primary issue X over which the players have conflicting interests. A, anticipating this strategic move, will stick with the original (normal) agenda. In this particular example, there are no exogenous forces that favor or disfavor passage of either issue in either period. The existence of such forces would, of course, also affect the attractiveness of the different agendas.

More broadly, when A and B's preferences align on Y and B does not have an incentive to pin A, then moving issue Y to be first will be more attractive to player A than sticking with the normal agenda.

5.2.2 Compressing the Decisions

We now examine the potential benefits associated with compressing a sequential agenda into a simultaneous single-decision-point agenda. As discussed earlier we have chosen to represent a compressed agenda in a way which maintains as much of the structure of our sequential agenda process as possible. Think of resources as being available exactly as in the sequential setting except that (1) resources can be allocated to either issue in each period, (2) the effectiveness of the resources expended in the first period is applied in the second period, and (3) the exogenous shifter z associated with the first period is set to zero. This structure implies that there is no direct interrelationship between expenditures across each period. For example, spending all one's resources on a single issue in the first period has no effect on the effectiveness of second period resource use. In principle we could attach a discount factor to first period resource use versus second period use, which would reflect the disadvantages attendant to premature influence activities, but for now we chose not to do so. [19]

Compression decisions within this structure are more efficient than under the sequential processes because players are not artificially restricted to using first period resources on a single issue. Without imposing additional costs to compression or reversing the agenda, then, we expect that compression will generally be favored and while such costs are real, it is nonetheless instructive to see how compressing decisions absent such costs affects the attractiveness of various agendas.[20]

The first period allocation constraint appears particularly inefficient for a player that has his secondary issue first and his primary issue second. Propositions 1 and 4 show that a weak relative preference is also characteristic of either focusing or pinning, situations in which one player acts against interest in the first period. We would therefore expect that where focusing or pinning is the equilibrium result of a particular sequential agenda at least one player will have a clear preference for a compressed agenda.

First, consider a sequential agenda that results in focusing. Focusing is a cooperative action that can be interpreted as "taking turns" supporting each other's primary issue. In a simultaneous agenda this is not possible: both players will concentrate on their primary issue. If the focused player has a much stronger intensity of preference regarding issue X than issue Y, it is easy to see that she will often prefer the sequential agenda. With focusing, player A supports his secondary issue X in the first period and then directs most of his resources towards his primary issue Y in the second period, whereas in the simultaneous agenda player A will allocate most of his resources towards his primary issue Y. The focusing player will prefer the simultaneous agenda over a sequential focusing agenda

[19] In theory, the agenda setter could choose the level of sequentiality of the decisions by optimally choosing the time at which the meeting on the first decision occurs. We begin, however, by treating the sequential agenda with the same implicit timing as in the base model–the influence periods preceding each of the decision points are equal-and compare this simple sequential agenda against a fully compressed single-decision-point agenda.

[20] In addition to the timing costs associated with changing the natural order of decision making, compression also suffers more from a commitment to making a decision than do either of the other agendas which allow for a delay of one issue.

because focusing requires an investment against interest on his secondary issue to get an increased probability of second-period help on his primary issue. But it is generally much better to use that first period investment directly on the primary issue. [21] Thus,

Lemma 3 *If focusing occurs in a sequential agenda, the focusing player prefers a simultaneous agenda to a focusing sequential agenda (sketch proof).*

Conjecture 2 *[Under TBD conditions] The focused player prefers the normal sequential agenda to a simultaneous agenda.*

Now suppose preferences lead to a pinning equilibrium in a sequential agenda. A pinning equilibrium implies that the pinning player (say, player A) has preferences such that $u_X + U_Y < U_{XY}$. Otherwise A would not act against interest to delay the first issue X over which there is agreement. The purpose of this strategic use of influence is to delay the resolution of B's primary issue X: moving to a simultaneous agenda accomplishes delay by fiat. However, moving to a simultaneous agenda also means that the resources which were previously cabined by the sequential decision sequence to issue X could be reallocated across both issues X and Y. If the net effect of the released resources is increased influence on issue Y (in the right direction), then the simultaneous agenda will be preferred by player A over the sequential agenda. At a minimum Player A can offset the actions of player B in the first period and, hence, create a situation with at least as good payoffs as under the sequential pinning agenda. This gives:

Lemma 4 *If pinning occurs in a sequential agenda, the pinning party prefers a simultaneous agenda to a sequential agenda.(sketch proof)*

Conjecture 3 *(Determine conditions under which) The pinee in a sequential agenda will also prefer the simultaneous agenda. (TBD)*

We now calculate the payoffs to the compressed agenda that correspond to the Integrated Examples 1 and 3 used above. Recall that the reverse agenda is Y followed by X. A compressed agenda is a two period allocation across both issues with a decision at the end of the second period. Under these preferences, the compressed agenda is clearly preferred to the normal and reversed sequential agendas

[21] If influence activities are less effective the earlier they are expended from the decision date, this would make the sequential agenda relatively more attractive for the focusing player than the simultaneous agenda.

with one exception, the focused player B has a strong overall preference for the normal sequential agenda.

Example 5 *Payoffs to Integrated Examples 1 and 3 under normal, reversed, and compressed agendas*

Agenda	***Strategy***	*A* ***payoff***	*B* ***payoff***
Normal (Ex. 1)	*A focuses B*	*0.105*	*0.283*
	myopic	*0.100*	*0.100*
Reverse (Ex. 3)	*B pins A*	*0.100*	*0.100*
	myopic	*0.280*	*0.095*
Compressed		*0.201*	*0.201*

The value of a compressed agenda is accentuated with payoffs where each player cares intensely about opposite issues. In such a case, there is less "offsetting" resource use on the issue over which the two conflict–the preferences lead to a natural differentiation of resource use over the issues.[22] It should also be noted that a third party agenda setter with completely different preferences (but limited direct influence) would not necessarily prefer a compressed agenda preferred by both A and B.

6 A Symmetric Model of Acceptance, Rejection, and Delay

To increase the transparency of the analysis we chose to focus on an asymmetric decision making setting in which first-period decisions are either accepted or delayed but cannot be rejected outright. While asymmetry is characteristic of a wide range of decision settings, it is useful to determine if the intuition from the asymmetric model is robust to symmetric decision settings where first period rejection is possible and both issues are on the agenda form the start.

To address these questions we modify our base model to allow for a symmetric treatment of rejection and a consideration of issue Y in the first period. We find that focusing and pinning continue to emerge in such settings and that it is possible that both players simultaneously engage in these strategies.

The model structure builds directly on the base model analyzed above. Adding Y to the first period creates a tradeoff in terms of the optimal use of resources because of our assumptions regarding decreasing marginal effectiveness with increased resource use. The other major addition is the how

[22] We chose such a case so that we could show focusing and pinning with a single set of preferences.

the probabilities of delay, acceptance, and rejection are handled. In the base model we treated delay as the outcome which occurred when an issue was not accepted. To include rejection as well as acceptance, requires that we now model delay and rejection. We allow delay to be generated by the actions of the players and also allow for the possibility that delay may be intrinsic to the decision and exogenous to the actions of the players. As discussed in Section 2, most observers have found a positive correlation between the desire to attain decision consensus and delay. Conflict which makes consensus more difficult would then seem also positively correlated with delay. We treat conflict (as indicated by settings where one player supports the proposal opposed by the other player) as increasing delay and agreement–both players supporting or opposing the proposal–as decreasing delay. These interactions are modeled as a first-period probability of decision delay d_i on proposal i.

$$d_i = z_D - \gamma a_i b_i$$

z_D is the exogenous decision delay probability and γ is a scaling factor for the endogenous delay effect caused by conflict or agreement over issue i. Note that the multiplicative functional form used here implies that agreement reduces delay whereas disagreement increases delay.

In a model that incorporates delay, actions that increase the probability of delay must have corresponding reductions in the probabilities of the other alternatives. This relationship was easy in the asymmetric model as changes were one for one with the probability of acceptance. When there are two non-delay alternatives–accept or reject–the assignment probability effects requires additional assumptions. This assignment is less obvious than it might appear at first consideration. If the probability of acceptance was relatively high to begin with, should that probability be reduced by the same absolute amount as the probability of rejection or should it be reduced proportionately? If the action that led to delay was a negative action, should the increased probability of delay come mostly from reduced acceptance? We model delay as follows: first, with probabilities d_i and $1 - d_i$, respectively, either decision i is delayed to the second period or it is resolved. If the decision is resolved, then the proposal is accepted with probability p_i and rejected with probability $1 - p_i$.[23]

The optimal static equilibrium strategies given by Lemma 1 are also the optimal second period equilibrium strategies for this symmetric model. We now turn our attention to an analysis of the first period actions.

[23] As the sum of the probabilities of the possible decision consequences must sum to one, this particular acceptance-rejection-delay structure distributes the changes in delay probabilities proportionately across accept and reject outcomes.

Because both issues X and Y are now considered in the first period, we have four possible agenda states in the second period instead of the two we had in the base model. The probabilities of each state are given by:

$$\begin{aligned}&\{\} \text{ with } (1-d_X)(1-d_Y)\\&\{X\} \quad \text{with } d_X(1-d_Y)\\&\{Y\} \quad \text{with } (1-d_X)d_Y,\\&\{X,Y\} \text{ with } \ d_X d_Y.\end{aligned}$$

The payoff for player A at a candidate set of period 1 choices is then given by the sum of the expected period 1 and 2 payoffs:

$$\begin{aligned} U^a &\equiv (1-d_X)d_Y\left[u_X+U_Y\right]+d_X\left(1-d_Y\right)\left[u_Y+U_X\right] \\ &\quad +d_X d_Y U_{XY}+\left(1-d_X\right)\left(1-d_Y\right)\left[u_X+u_Y\right] \end{aligned} \tag{10}$$

Recall that delay is due to exogenous and endogenous factors: $d_i = z_D - \gamma a_i b_i$. Similarly, for player B we have

$$\begin{aligned} V^b &\equiv (1-d_X)d_Y\left[v_X+V_Y\right]+d_X\left(1-d_Y\right)\left[v_Y+V_X\right] \\ &\quad +d_X d_Y V_{XY}+\left(1-d_X\right)\left(1-d_Y\right)\left[v_X+v_Y\right] \end{aligned} \tag{11}$$

The incentives for player A for allocating influence across the two proposals are:

$$\frac{\partial U^a}{\partial a_x} = \delta u_X - \delta u_X d_X + \gamma b_x[-U_X + (U_X - U_Y - U_{XY})d_Y + p_x u_X]$$

$$\frac{\partial U^a}{\partial a_y} = \delta u_Y - \delta u_Y d_Y + \gamma b_y[-U_Y + (U_X - U_Y - U_{XY})d_X + p_y u_Y]$$

and similarly the incentives for player B are:

$$\frac{\partial V^b}{\partial b_x} = \delta v_X - \delta v_X d_X + \gamma a_x[-V_X + (V_X - V_Y - V_{XY})d_Y + p_x v_X]$$

$$\frac{\partial V^b}{\partial b_y} = \delta v_Y - \delta v_Y d_Y + \gamma a_y[-V_Y + (V_X - V_Y - V_{XY})d_X + p_y v_Y]$$

Our purpose with this more complicated model is to provide some analytical support for our contention that focusing and pinning will appear in a wide range of decision circumstances. We therefore focus on examples which illustrate such equilibria in the more complex model rather than developing a general characterization for such equilibria. Before moving to these examples, however, we show that endogenous delay is necessary to obtain focusing and pinning.

6.1 Exogenous Delay Benchmark

This benchmark setting corresponds to the situation in which resource decisions in the first period have no effect on delay. When $\gamma = 0$, delay, defined in the model as $d_i = z_D - \gamma a_i b_i$ becomes exogenously dependent on z_D alone.

Because the first period resource choices have no effect on whether an issue is delayed, the players maximize an objective function that is the same as that faced in the second period (static) setting where both issues are still on the agenda except for a scaling determined by the level of exogenous delay. Hence we have

Lemma 5 *Consider the symmetric model. If delay is exogenous, i.e., $\gamma = 0$, then the optimal first-period actions a_X, a_Y, b_X, and b_Y are the same as the corresponding optimal actions in the static equilibrium when issues X and Y are both on the agenda. (Proof in appendix)*

This result means that effects of exogenous delay on optimal actions are isolated in the model from the effects of strategic delay. Hence, in what follows we can attribute changes in first-period actions relative to the optimal static equilibrium actions as resulting from strategic choices. Exogenous delay does, of course, affect overall outcomes by creating an "agenda" for decision making in the second period. Without delay all issues would be resolved in the first period.

With this preliminary in place, we now begin our analysis of some examples of strategic delay using our symmetric model.

6.2 Example of Strategic Delay in a Symmetric Model with Partial Conflict

We again focus our analysis on the most interesting cases from the base model: examples involving partial conflict with preferences that might induce focusing or pinning. Without loss of generality, one can normalize $u_X = -1$, $v_Y = 1$ and then choose $v_X$and u_Y to generate differences in the intensity and direction of preferences. Consider a partial conflict setting in which players A and B both oppose issue X, while and player A opposes Y and player B supports Y.

The second period optimal strategies for this setting are easy to analyze. With issue X only, both players oppose and we have $U_X = u_X(z - 2\bar{p})$ and $V_X = v_X\,(z - 2\bar{p})$. With issue Y only both players have opposite preferences and $U_Y = u_Y z$ and $V_Y = v_Y z$. With both issues active, we have the unique optimal static choices given by $u_X = g'(-a_X^*)$ and $a_Y^* = -g(a_X^*)$ and

$-1 = g'(-b_X^*)$ and $b_Y^* = -b_X^*$. Thus, when both issues are active, the players divide their influence allocations.

In this symmetric model focusing and pinning only operates through delay. An increase or decrease in resource expenditures directly alters the probabilities of whether the decision is accepted or rejected, but this does not change the probability that a decision is resolved in the first period. However, a resource allocation operating through the delay channel affects the likelihood that the decision will be resolved in the first period and, hence, affects the agenda for the second period.

We explore a particular numerical example of partial conflict in which A and B strongly care about issues X and Y, respectively, but care weakly about the outcomes of the other issue. To analyze this example we make a number of specific assumptions. Suppose the preferences are as below and we make a number of other assumptions regarding the parameters of the decision environment and the effectiveness of influence (g) function.[24] Then the following set of actions constitute an equilibrium in which both pinning and focusing are present.

Example 6 *Symmetric model example with focusing and pinning*

Preference Structure	*Player A*	*Player B*
Issue X	$u_X = -1$	$v_X = -0.01$
Issue Y	$u_Y = -0.01$	$v_Y = 1$

Equilibrium Actions	*first period {XY}*	*second{XY}*	*second {X}*	*second {Y}*
Issue X	$a_X = -0.228$ $b_X = 0.022$	$a_X = -0.2399$ $b_X = -0.024$	$a_X = -0.24$ $b_X = -0.24$	*NA* *NA*
Issue Y	$a_Y = 0.0749$ $b_Y = 0.239$	$a_Y = -0.024$ $b_Y = 0.2399$	*NA* *NA*	$a_Y = 0.24$ $b_Y = -0.24$

Focusing: In this example is that player A's gain from focusing is large enough that A takes actions on issue Y that are against interest. That is, in a static equilibrium A would allocate a small amount against issue Y. Here, however, A allocates a larger amount in favor of issue Y. By so doing the probability that issue Y is resolved decreases from 0.35 to 0.17. Here A's actions against

[24] Each player has resources sufficient (if unchallenged) to increase the probability of acceptance or rejection of a single issue by nearly one quarter ($\overline{p} = 0.24$, $\delta = 1.0$) with issues that have a base one-period probability of acceptance of 0.5 ($z = 0.5$). Resources between issues can be traded off according to $g(a, \overline{p}) = \sqrt{\overline{p}^2 - a^2}$. Finally, delay is very likely should both players use all of their resources in opposition to each other ($\gamma = 10$ and $y = 0.35$).

(short-run) interest replaces conflict with agreement in the first period. As in the asymmetric model, the focusing incentive is strongest when there are strong asymmetries in the degree to which they care about each decision. That is, the issue that player A cares most about is the one that player B cares least about and vice versa. Furthermore, the player that adopts a focusing strategy is the one which cares the most about the decision over which there is agreement. Focusing will not occur through actions on a decision that increase the level of conflict between the two players. Increased opposition reduces the probability that the decision will be resolved. Hence, if conflict exists, focusing requires that it be decreased.

Pinning The great asymmetry in preferences and partial conflict also create significant incentives for player B to pin player A to proposal X. Player A's concern with issue X–the reason for A to engage in some focusing activity– means that A will load its attention on issue X rather than issue Y if both issues are still on the agenda. In the second period A will oppose decision Y while B will support the decision. Hence, B would prefer that A is pinned to issue X. Player B can do this by increasing the probability that issue X is delayed in the first period. In this example, B also goes against her short-run interest by spending against an proposal she weakly favors thereby increasing delay from 0.35 to 0.40.

It is straightforward to find examples in which both players pin each other and in which both players focus each other. Finally, there are also examples involving focusing where the players appear to coordinate to attack one issue at a time.[25]

7 Discussion

We have analyzed a decision making environment that has particular resource characteristics: resources are nonstorable, have no cumulative effect, and cannot be increased or augmented. We believe that the intuition generated by our model is robust to a mild relaxing of these resource assumptions. If, for example, first period resource use continues to influence subsequent period outcomes, the relative attractiveness of a focusing strategy would decline as expenditures against interest are costly in

[25] Our base model forces a resolution at the end of the second period and, hence, effectively does not allow the second proposal to be delayed. There are, of course, some settings in which delay is not an option. The symmetric model, however, does allow delay to occur with both options and allows the likelihood of delay to increase with the extent of disagreement. Because the symmetric model produces analogous results to those in the base model, we do not think that asymmetric delay in the base model is responsible for our basic results.

both periods, but the marginal benefit to focusing are the same as before. Storable resources would allow players to use more resources in the second period and less in the first. Given the decreasing marginal benefits to increased expenditures, such a strategy clearly entails a reduction in overall influence. There is, however, the possibility that there is a benefit to waiting to see the resolution of period one. This would allow for a better use of resources in period two–probably to avoid a joint neutralizing of resources use.

A core element of our model is a per period tradeoff between expenditures over the two decisions. The incentive to focus is clearly increased if expenditures on any issue are essentially costless up to one's budget. In the model, a weak preference for a positive resolution of a decision results in the same second period resource use (if that is the only decision available). If use of resources had significant and increasing marginal costs (relative to the size of the utility associated with the secondary proposal) associated with them, then the level of expenditure for a weak preference would be scaled back, thereby weakening the focusing effect. While the incentive to focus might be weakened, it is possible that the incentive to pin may increase. In any event, our canonical example is based on decision maker attention as the scarce resource and our analysis is most applicable to circumstances where that resource is difficult or very costly to augment.

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Appendix (Incomplete)

Proof. Lemma 2 and Proposition 1: By Case 1, $v_X > 0 > u_X$, $u_Y > 0$ and $v_Y > 0$. Then $U_X = zu_X$, and $V_X = zv_X$ since $a_X = -\bar{p}$ and $b_X = \bar{p}$. $U_Y = (z + 2\bar{p})u_Y$, and $V_Y = (z + 2\bar{p})v_Y$, since $a_X = b_X = \bar{p}$. $U_{XY} = u_X(z_X + a_X^* + b_X^*) + u_Y(z_Y + a_Y^* + b_Y^*)$ and $V_{XY} = v_X(z_X + a_X^* + b_X^*) + v_Y(z_Y + a_Y^* + b_Y^*)$.

Proof of Lemma 2: B chooses b_x to maximize $(z_X + a_x + b_x)(v_X + V_Y) + [1 - (z_X + a_x + b_x)V_{XY}$. $b_x^* = \bar{p}$ iff the $\frac{\partial}{\partial b_x}$ of the objective function > 0 which is true iff $v_X + V_Y > V_{XY}$. Expanding this inequality gives $v_X + (z + 2\bar{p})v_Y > (z_X + a_X^* + b_X^*)v_X + (z_Y + a_Y^* + b_Y^*)v_Y$. This inequality holds because (1) $1 > z_X + a_X^* + b_X^*$ by condition 2; (2) $z + 2\bar{p} > z + a_Y^* + b_Y^*$ by $\bar{p} \geq a_Y$ and $\bar{p} \geq b_Y$; and (3) each of $v_X > 0$ and $v_Y > 0$ holds by the case assumption.$\square$

Now consider the choice of player A. Player A chooses a_x to maximize $\{(z_X + a_x + b_x)(u_X + U_Y) + [1-\ (z_X + a_x + b_x)]U_{XY}\}$ which is maximized at $a_x = \bar{p}$ and $a_x = -\bar{p}$ as $u_X + U_Y > U_{XY}$ or $u_X + U_Y < U_{XY}$, respectively. Substituting for U_Y and U_{XY}, rearranging terms, and noting that $u_Y > 0$ gives $a_x = \bar{p}$ if $(2\bar{p} - b_Y^* - a_Y^*) - (\frac{-u_X}{u_Y})[1 - z_X - b_X^* - a_X^*] > 0$ and $a_x = -\bar{p}$ if $(2\bar{p} - b_Y^* - a_Y^*) - (\frac{-u_X}{u_Y})[1 - z_X - b_X^* - a_X^*] < 0$. Define $u \equiv \frac{-u_X}{u_Y}$, $v \equiv \frac{v_X}{v_Y}$. The generic properties of the solution to the static Nash equilibrium strategies (see Lemma 1) allow us to write the second period choices in the $\{XY\}$ state in terms of the preference ratios – $a_i^*(u)$ and $b_i^*(v)$. Then for a given v we define $h(u, v) \equiv (2\bar{p} - b_Y^*(v) - a_Y(u)) - (\frac{-u_X}{u_Y})[1 - z_X - b_X^*(v) - a_X(u)]$. If, for any $v > 0$, $h(u, v)$ is (1) decreasing in u, (2) positive at $u \to 0$, (3) negative at $u \to \infty$ and (4) there $\exists!\ u \ni h$ crosses 0. (1) is shown by differentiating h by u and applying the envelope theorem and the interior probability assumption. Letting $u \to 0$ in $h(u, v)$ and noting that $a_X(u) \to 0$ and $a_Y(u) \to \bar{p}$, gives $h(u, v) > 0$, thereby establishing (2). Similarly letting $u \to \infty$ in $h(u, v)$ and noting $a_X(u) \to \bar{p}$ and $a_Y(u) \to 0$, gives $h(u, v) \to -\infty$ establishing (3). (1), (2), and (3) show that h crosses zero one time at some $u = \bar{u}(v) \in (0, \infty)$ and (4) follows. Then $h(u, v) > 0$ holds for $0 < u < \bar{u}(v)$ where $h(\bar{u}(v), v) = 0$. $\blacksquare$

Proof. Proposition 2 Recall that $h(u, v)$ crosses zero at $\bar{u}(v)$ where $(2\bar{p} - b_Y(v) - a_Y) - u[1 - z - b_X(v) + a_X] = 0$. Implicit differentiation of that equation by v gives $\frac{\partial u}{\partial v}[1 - z - b_X(v) + a_X(u)] = -b_Y'(v) + ub_X'(v)$ which is greater than zero as $b_Y'(v) < 0 < b_X'(v)$. Hence, $\bar{u}(v)$ is increasing in v. $\blacksquare$

Proof. Proposition 3 (sketch of proof) In a focusing equilibrium player A chooses $a_x = \bar{p}$ against own interest based on $u_X < 0$. $a_x = \bar{p}$ is optimal when the first order condition is $u_X + U_Y - U_{XY} > 0$. Substituting for U_Y and U_{XY}, noting that $a_Y' + b_Y' = 0$ [where a_y' and b_y' are the optimal actions where only issue Y is on the second-period agenda] as players A and B choose oppositely in Y, and rearranging terms $u_X + U_Y - U_{XY} > 0 \Leftrightarrow$

$$u_X[1 - (z_X + a_x + b_x)] - (a_y + b_y)u_Y > 0. \tag{12}$$

To show that alignment in Y is necessary we show that the first order condition for focusing (12) and that players A and B conflict on issue Y are contradictory. There are two cases for conflict (A) $u_Y > 0 > v_Y$ and (B) $u_Y < 0 < v_Y$.

Case A $(u_X < 0$ and $u_Y > 0 > v_Y)$: Show that that this Y conflict case contradicts the first order condition which requires that $u_X + U_Y - U_{XY} > 0$. A contradiction occurs if $u_X\left[1 - (z_X + a_x + b_x)\right] - (a_y + b_y)u_Y < 0$ or, after substituting in u and rearranging and combining terms $0 < (a_y + b_y) + u\left[1 - (z_X + a_x + b_x)\right]$. Recall that $u \equiv \frac{-u_y}{u_y} > 0$. As $-ub_X < 0 < -ub_X^{'}$ we need only show the contradiction for $v_X > 0$. Differentiating $(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$ by v and using the various relationships from the influence frontier g (See condition 1 and equations (3) and (4)) gives $\frac{\partial}{\partial v}[(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right] = \frac{1}{g''}(u - v)$. Since $g'' < 0$, then this partial derivative is negative for $v < u$ and positive for $v > u$. Since the $(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$ is easily seen to be positive at $v = u$, then the expression is always positive and the contradition is established.

Case B $(u_X < 0$ and $u_Y < 0 < v_Y)$: Show that that this Y conflict case contradicts the first order condition which requires that $u_x + U_y - U_{xy} > 0$. A contradiction occurs if $u_x\left[1 - (z_X + a_x + b_x)\right] - (a_y + b_y)u_y < 0$ or, after substituting in u and rearranging and combining terms $0 > (a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$. Recall that $u \equiv \frac{-u_y}{u_y} > 0$. As $-ub_X > 0 > -ub_X^{'}$ we need only show the contradiction for $v_X < 0$. Differentiating $(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$ by v and using the various relationships from the influence frontier g (See condition 1 and equations (3) and (4)) gives $\frac{\partial}{\partial v}[\cdot] = \frac{1}{g''}(v - u)$. Since $g'' < 0$, then this partial derivative is negative for $v > u$ and positive for $v < u$. Since the $(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$ is easily seen to be negative at $v = u$, then $(a_y + b_y) + u\left[1 - (z + a_x + b_x)\right]$ is always negative and the contradition is established. ■

Proof. Proposition 4 The partial conflict pinning assumptions are: $v_Y > 0 > u_Y$, $u_X > 0$ and $v_X > 0$. From Lemma 2 we know that player B chooses $b_x > 0$ in period one. Player A chooses a_x to maximize $(z_X + a_x + b_x)(u_X + U_Y) + [1 - (z_X + a_x + b_x)]U_{XY}$. Then $a_x = -\bar{p}$ iff $u_X + U_Y < U_{XY}$. The case assumptions and the static optimum analysis above leads to $a_x^* > 0 > a_y^*$ and $b_x^* > 0, b_y^* > 0$. $u_X + U_Y < U_{XY}$ iff $u_X[1 - z - a_X^* - b_X^*] - u_Y[a_Y^* + b_Y^*] < 0$. Define $u \equiv \frac{-u_X}{u_Y}$, $v \equiv \frac{v_X}{v_Y}$. The generic properties of the solution to the static Nash equilibrium strategies (see Lemma 1) allow us to write the second period choices in the $\{XY\}$ state in terms of the preference ratios – $a_i^*(u)$ and $b_i^*(v)$. Then $a_x = -\bar{p}$ iff $h(u,v) \equiv u[1 - z_X - b_X(v) - a_X(u)] + (b_Y(v) - a_Y(v)) < 0$. If, for any $v > 0$, $h(u,v)$

is (1) increasing in u, (2) negative as $u \to 0$, and (3) positive as $u \to \infty$, then for any v there $\exists!$ $\bar{u}(v)$ $\ni h(\bar{u}, v) = 0$ since h is increasing, and $h(0) < 0 < h(\infty)$. (1) is shown by differentiating h by u and applying the envelope theorem and the interior probability assumption. Letting $u \to 0$ in $h(u, v)$ and noting that $a_X(u) \to 0$ and $a_Y(u) \to \bar{p}$, gives $h(u, v) < 0$, thereby establishing (2). Similarly letting $u \to \infty$ in $h(u, v)$ and noting $a_X(u) \to \bar{p}$ and $a_Y(u) \to 0$, gives $h(u, v) \to \infty$ establishing (3). ■

Proof. Proposition 5 Recall that $h(u, v)$ crosses zero at $\bar{u}(v)$ where $(b_Y(v) - a_Y) + u[1 - z - b_X(v) + a_x] = 0$. Implicit differentiation of that equation by v gives $\frac{\partial \bar{u}}{\partial v}[1 - z_X - b_X(v) + a_X(\bar{u})] = \bar{u}\frac{\partial b_X(v)}{\partial v} - \frac{\partial b_Y(v)}{\partial v}$, which is greater than zero as $b'_Y(v) < 0 < b'_X(v)$. Hence, $\bar{u}(v)$ is increasing in v. ■

Proof. Proposition 6 In a pinning equilibrium player A chooses $a_x = -\bar{p}$ against own interest based on $u_X > 0$. $a_x = -\bar{p}$ is optimal when the first order condition $u_X + U_Y - U_{XY} < 0$. Substituting for U_Y and U_{XY} and rearranging terms $u_X + U_Y - U_{XY} < 0 \Leftrightarrow$

$$u_X[1 - (z_X + a_x + b_x)] + (a'_y + b'_y)u_Y - (a_y + b_y)u_Y < 0 \tag{13}$$

where a'_y and b'_y are the optimal actions where only issue Y is on the second-period agenda. Now suppose that A and B are aligned on Y. There are two cases of alignment.

Case 1 ($u_Y > 0, v_Y > 0$ and $u_X > 0$): then $a'_y = b'_y = 2\bar{p}$. But $u_X[1-(z_X+a_x+b_x)]+(2\bar{p}-a_y-b_y)u_Y > 0$ which contradicts (13)

Case 2 ($u_Y < 0, v_Y < 0$ and $u_X > 0$): then $a'_y = b'_y = -2\bar{p}$. $u_X[1-(z_X+a_x+b_x)]-(2\bar{e}+a_y+b_y)u_Y > 0$ and contradicts (13)

Hence, pinning cannot occur with alignment over the second issue. ■

Proof. Lemma 3 (TBD sketch) Let A be the player that focuses in a sequential agenda. Then, A acts against interest in the first period with a short-term marginal loss since u_1 is negative. The gain to focusing is that A increases by a_X the probability that only Y will be on the agenda in period two which means that B will then spend all of its second-period resources on issue Y. Otherwise, it would have split its resources between issues X and Y. Focusing requires $u_X + U_Y > U_{XY}$, so A clearly prefers that B spend on issue Y only rather than splitting. The greatest possible gain for A with focusing occurs when B would have spend (almost) all of its resources on issue X if both issues were on the agenda. In that case A's the marginal gain to increasing the probability of the Y only state is B's complete expenditure in favor of issue Y. But with a compression agenda, A can achieve this directly by spending its (virtual) first-period resources on Y directly. Hence, A will prefer the compression agenda to a focusing sequential agenda. ■

Proof. Lemma 4 (TBD sketch) Because of the linearity of the probability structure and the separability of rival decisions, the optimal choices in period two are not affected by choices in (virtual) period one. In the sequential agenda, pinning implies that A uses his entire allocation against interest in period one. The concern with a compression agenda versus sequential agenda is that B might use her first period resources against issue Y which was previously not possible. Given the separability of decisions, consider a suboptimal "covering" allocation by A that exactly neutralizes the optimal B choice when they are in conflict. This is clearly possible given that allocations are period specific. It cannot be that this allocation is any worse than the sequential against-interest pinning allocation. Thus, whatever B spends for issue Y, player A spends against issue Y. This covering allocation outcome is weakly superior to the sequential agenda outcome and, hence, a compressed agenda is always preferred to a sequential agenda by a player that would optimally choose a pinning strategy in a sequential agenda process. ■

Proof. Lemma 5 $\gamma = 0$ implies that $d_X = d_Y = z_D$. $U^a = z_D^2 U_{XY} + z_D(1 - z_D)[U_X + p_Y u_Y] + (1 - z_D)z_D[p_X u_X + U_Y] + (1 - z_D)^2[p_X u_X + p_Y u_Y]$ which, after rearranging terms and simplifying gives $U^a = z_D[U_X + U_Y] - z_D^2[U_X + U_Y - U_{XY}] + (1 - z_D)[p_X u_X + p_Y u_Y]$. Similarly, $V^b = z_D[V_X + V_Y] - z_D^2[V_X + V_Y - V_{XY}] + (1 - z_D)[p_X v_X + p_Y v_Y]$. Maximizing U^a and V^b involves solving $\max\limits_{a_X, a_Y}\{p_X u_X + p_Y u_Y\}$ and $\max\limits_{b_X, b_Y}\{p_X v_X + p_Y v_Y$ with solutions that are the same as those for the static actions when both issues X and Y are on the agenda. ■