

# “Cheap Talk” Diplomacy, Voluntary Negotiations, and Variable Bargaining Power\*

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## Abstract

It is well known that during a crisis states have an incentive to misrepresent their true resolve and willingness to go to war. This theoretical result has been taken to imply that diplomacy, interpreted as pre-bargaining communication, can have no effect on the way crises play out. This paper shows an intuitive way that diplomatic cheap talk can matter in a single crisis between countries, especially when the bargaining game has multiple equilibria. In particular, if after “diplomacy” states can choose to either fight a war directly or bargain in hopes of reaching a peaceful settlement, then it is possible to find an equilibrium where diplomacy influence whether there is war or peace. Importantly the cheap talk diplomacy does three things the standard model says it cannot: it coordinates actions, it reveals information, and it changes the *ex ante* probability of war. This result demonstrates an easy way of reconciling the discrepancy between the obvious empirical observation that diplomacy often does influence the path of a crisis and the rationalist model of war.

*Key Words:* Diplomacy, war, cheap talk.

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# 1 INTRODUCTION

Since the work of Fearon (1995), scholars of international relations have understood how the incentives countries face during crisis bargaining may affect the possibility of resolving disputes through diplomatic means. If diplomacy is costless communication that aims to reveal information about a country's preferences, Fearon (1995, p.391) shows that the incentive to misrepresent one's resolve explains why diplomacy does not allow rational states to avoid miscalculations and why some crises eventually end in war. The logic of this result is undeniable and it has had an important effect on the way international relations scholars view what was once taken to be the center piece of world politics, diplomacy. The Fearon result has led many to turn a critical eye toward the standard diplomatic histories that have for a long time defined our understanding of how politics between countries work. In short, the incentive to misrepresent has left scholars in the uncomfortable position of believing that direct "cheap talk" diplomacy between countries at least occasionally does what the rationalist model says it cannot—it reveals private information about resolve information and leads countries to spend time and effort looking for peaceful solutions to their disputes—but no real answer to why this is possible in the case of crisis bargaining.

The tension between standard readings of international history and the rationalist theory of crisis bargaining has not gone unnoticed by previous scholars. In fact, in recent years, a significant literature has tried to understand how diplomacy might work in a world where goal oriented rational decision-makers are central to international politics. In many noteworthy articles, theorists have expanded the simple bargaining model of war and included new factors, like domestic political incentives, multiple channels of communication, and concerns about a country's long-run reputation, in order to make diplomacy matter in a crisis. For example, Fearon (1994), Ramsay (2004), Schultz (2001), and Smith (1998) look at how domestic audience costs might make diplomatic "cheap talk" credible. In these models domestic interest groups, such as voters, opposition groups, and out of office political parties

have preferences over the foreign policy actions of leaders. By making explicit the connection between domestic politics, leadership tenure, and otherwise costless foreign policy statements, these works have shown that diplomacy might not be so cheap for leaders when all is said and done. Though the details vary in this literature linking leadership tenure and diplomacy, in many ways the mechanisms are similar. In each case international statements have domestic consequences. Fearon (1994) and Schultz (2001) model a stylized story by having leaders pay a cost for escalating a crisis and backing down and, thus, generate costly domestic signals from otherwise costless international actions. Ramsay (2004) and Smith (1998) outline similar mechanisms, the former focusing on the domestic interaction between opposition and voters, the latter focusing on the beliefs of voters in a selectorate. Moreover the last two articles explore the possibility of domestic politics endogenously generating domestic audience costs, by assuming leaders have persistent quality and that the outcome of a crisis—including its various cheap talk threats—can reveal information about the desirability of keeping a particular leader from one period to the next. In the final analysis, however, the stories are very similar to those in Fearon (1994) and Schultz (2001). In either case, international diplomacy generates domestic political costs lending credibility to otherwise incredible demands.

Alternatively, others have looked at the relationship between diplomacy, countries' long-term goals, and the possible influence of reputation on crisis outcomes. In this literature countries, or leaders, are viewed as long-lived players who, because they participate in multiple crises, worry about how current behavior will influence future crisis outcomes. Specifically, it is argued that diplomatic honesty is an important part of a country's reputation. Clearly, these general ideas concerning the importance of a country's reputation are not completely new, various forms of this argument is found in much of the classic literature on international relations (Nicolson 1964, Morgenthau 1960). In a foundational paper Sartori (2002) casts this story in a rationalist framework and demonstrates that the received wisdom, claiming that "honest" diplomacy may be possible between rational countries precisely

because it is useful, has solid theoretical micro-foundations. In her analysis Saroti shows that, if states ignore the statements of countries that have been caught lying in the past, then countries may rationally choose to be honest with their opponents today so that they will be believed in the future. Moreover, this ignoring of messages from previously dishonest countries is perfectly consistent with rational behavior.

Guisinger and Smith (2002) work on a similar problem and extend Sartori's analysis by endogenized the mechanism by which a country regains a reputation for honesty. They argue that if reputation is leader contingent, rather than country contingent, and if new leaders get the benefit of the doubt from other countries—i.e., they start with a reputation for begin honest—then when an incumbent is caught being dishonest she will be removed by her constituents in order to re-establish a country's reputation. This interaction of diplomacy, domestic politics, and reputation then generates a plausible mechanism for meaningful cheap talk communication. This is an interesting extension of Sartori's logic for the case where there are shorter-lived leaders, which are not covered by Sartori's analysis.

While these two approaches to diplomacy have opened up interesting connections with domestic politics, the audience cost and reputation mechanisms are not completely satisfying. Both the audience cost and reputational approaches have a common theme when it comes to solving the incentive problem in a crisis, they both rely on mechanisms outside the crisis itself to make diplomacy effective and meaningful. In each case it is concerns about some non-crisis specific consequence the country or leader faces as a result of their speech, such as domestic politics or future interactions, that make diplomacy relevant. We are thus left with the impression that the credibility of the conflicting parties communication is not, and possibly cannot, be a product of the countries' interest in finding some solution to the current crisis and avoiding war.

So while both the audience cost and reputational models provide answers as to why diplomacy may appear to have an effect in crises, these results also beg more questions. For example, can diplomacy only work in the presence of audience costs? What if a leader cannot

generate audience cost, diplomacy is private, or a leader does not come from a democracy and faces little chance of being removed from office no matter how the crisis turns out? It seems that contrary to such a theory, diplomacy was central to world politics in the centuries before democracies were either prevalent or powerful. Similarly, what if countries are in such a severe crisis that the shadow of the future is of little relevance? It seems that decision-makers act as if diplomacy in these circumstances can be very important, but can it ever be the case that the desire to avoid war in the current crisis is sufficient to induce meaningful diplomacy?

One might expect that, as Fearon argues, diplomacy cannot matter in the absences of these other mechanisms because each side has an obvious incentive to seem as resolved as possible in hopes of extracting additional concessions from their current opponent. Yet, casual observation suggests that diplomacy of the opposite kind is, in fact, also a common occurrence. That is, when some country truly wishes to avoid war, diplomacy is often encouraging and optimistic about the prospects for peace. Examples of this sort can be found from the Prussian proposal to partition Poland in 1771, to the resolution of the Anglo-German Crisis over Zanzibar in East Africa, to Chamberlain's diplomacy during 1938 Czechoslovakian crisis. One possible reason for the effectiveness of these various acts of diplomacy is that, in each case, taking too staunch a position with respect to a potential peaceful solution may have pushed the other side away from engaging in serious negotiations. While the above cases provide specific instances of such a dilemma, the concern that cheap talk diplomacy may thwart attempts to negotiate peaceful Pareto-improving settlements is likely to be a general problem faced by countries. This is especially true if, in anarchy, no single country has the ability to force another to the bargaining table.

In this paper we turn this basic intuition into a formal model of diplomacy in anarchy. We show that if it is possible that making hard-line diplomatic statements makes ones opponent rationally forego negotiations, then diplomatic cheap talk can matter without reference to domestic politics or long-term concerns about reputation. In particular, if after a diplomatic

exchange countries can choose to either fight a war directly or bargain in hopes of reaching a peaceful settlement, then it is possible to find equilibria where diplomacy influence whether there is war or peace, influences decision-makers' beliefs about the resolve of their opponent, and changes the *ex ante* probability of war. The mechanism described here also provides an interesting explanation for some strange behavior. It is not uncommon to find “small” or “weak” countries making extreme statements in their diplomacy. For example, North Korea has been know to declaim it will wipe the United States off the map, while large countries rarely—if ever—make official statements that are so aggressive. While there are numerous potential reasons for this pattern between asymmetric countries and diplomacy, the analysis below shows that country's “diplomatic strategies” depend on bargaining power in the way the would predict this kind of behavior. Countries with little bargaining power more frequently choose “resolved” strategies while countries with more bargaining power are more likely to take “flexible” or accommodating diplomatic positions.

The two papers closest to this one are Kurizaki (2007) and Farrell and Gibbons (1989). Kurizaki looks at the potential for “private” diplomacy to influence the trajectory of an international crisis. For Kurizaki private diplomacy has many of the characteristics of what I would call simple diplomacy. Domestic politics is irrelevant for payoffs when issues are settled privately and there are no long-lived players with reputational consequences to consider. It is worth noting, however, that even though this article is clearly aimed at understanding cheap talk communication between countries when they choose to keep the interactions secret, the model does not focus on the actual cheap talk diplomacy. Instead the analysis considers the relative value of the information and escalatory effects of sending public signals on the outcome of a crisis. Kurizaki then shows that sometimes it is worth sending the “weak” signal of going for private negotiations in return for the ability to reach an agreement. Our analysis shows that a similar logic can also lead to informative cheap talk in equilibrium.

Farrell and Gibbons's (1989) famous paper on cheap talk is also closely related to the analysis below. There are two differences. The first, and most obvious, is the application

of the logic of the incentives of surrounding the bargaining problem to situations of war, where they are interested in exchanges between buyers and sellers. Second, because we are interested in the effects of bargaining power, we analyze a model where bargaining power varies. As a consequence the model of Farrell and Gibbons is a special case of our model.<sup>1</sup>

The paper proceeds as follows. The next section provides a stylized story of crisis diplomacy and a formal description of the game. Following the model we characterize the bargaining strategies in the game, consider the cheap talk extension that models diplomatic communication, and highlighting the intuition behind the equilibria. The next section discusses various aspects of the model's equilibrium and relates results to what we know about diplomacy as cheap talk to date. We also discuss two cases where this sort of simple diplomacy appears important. The final section concludes.

## 2 A MODEL OF SIMPLE DIPLOMACY

To be clear, in this paper we are interested in the effects of what could be called *simple diplomacy*. That is, diplomacy detached from reputation and or domestic politics. Formally, we are interested in investigating the sorts of crisis situations where diplomatic communication can be viewed as a simple crisis specific extension of the underlying strategic bargaining process. It can be shown that there is, in fact, an easy way to construct an extension of the traditional crisis bargaining game that produces meaningful and effective diplomatic speech. That is, there is a simple game where there exists a *communication equilibrium* where players truthfully reveal private information. As we show below, all we must do is allow countries to choose to play an equilibrium where immediate war and not negotiations occur. This can

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<sup>1</sup>Specifically, we consider arbitrary weights in the bargaining procedure where Farrell and Gibbons only analyze the symmetric case. There is also a small, but substantively irrelevant error in the Farrell and Gibbons proof, which we correct in our presentation.

be done in environments where war is a unilateral act, that is any country can start a war at any time. In this situation cheap talk diplomacy both reveals information and coordinates behavior on particular equilibria to the bargaining game after different diplomatic exchanges. So, if bargaining only takes place in equilibrium when countries choose not to fight, then simple diplomacy can be an effective means for conveying information and influencing the path of the crisis

To start, we model diplomacy during an international crisis as a one shot bargaining problem with cheap talk. To model this consider an interaction between two countries, called one and two. Country one is satisfied with the status quo and country two is dissatisfied. Let  $v_1 \in [\underline{v}_1, \bar{v}_1]$  be country one's value of keeping the status quo relative to war and normalize his war payoff to be zero. Let  $v_2 \in [\underline{v}_2, \bar{v}_2]$  be the dissatisfied country's payoff to war. We assume that these values are privately valued private information with the value for country one having a strictly increasing differentiable cumulative distribution function  $F_1(v_1)$ . Country two's value for war similarly has a strictly increasing differentiable cumulative distribution function  $F_2(v_2)$  and these distribution functions are common knowledge.

Given that country two is dissatisfied and country one has a positive relative value of the status quo, the countries can negotiate over a transfer or concession that country one can make to country two to avoid war. We consider a bargaining game where countries simultaneously choose bargaining positions  $b_1$  and  $b_2$ . So like giving a diplomat a set of instructions saying "bring back at least  $x$ ," decision-makers strategically choose a bargaining position that will determine both the settlement that is reached and the probability there is peace. If country one's position is sufficiently generous to accommodate the minimal demands of country two, i.e.  $b_1 > b_2$ , then the concession, or transfer, from country one to country two is  $kb_1 + (1 - k)b_2$ . In this set-up  $k$  indexes the bargaining procedures by the "bargaining power" of country one. When  $k > 1/2$ , country one's bargaining position is more important for determining the concessions, when  $k < 1/2$  country two has more bargaining power. When  $k = 1/2$  the bargaining power of the players is symmetric. Interesting special cases

are when  $k = 1$  and  $k = 0$ . These then reduce to ultimatum games, where either country one makes a take-it-or-leave-it proposal or where country two makes a take-it-or-leave-it demand. Given the symmetric nature of our game, it will be easiest to focus on  $k \geq 1/2$ , but the analysis is easily extended for the case where country two has more bargaining strengths and the same logic applies.

Given this underlying strategic problem, we can consider what happens when we allow the countries to have pre-play communication. To keep things simple, assume that players have two possible messages, “flexible” and “resolve.”<sup>2</sup> After messages are sent countries then play the bargaining game described above. We will call this the cheap talk or diplomacy extension to the crisis bargaining game.

### 3 RESULTS

With this framework, we can now start characterizing equilibrium strategies of our bargaining game. For now we will ignore the pre-crisis diplomacy and characterize equilibrium strategies under different beliefs about the types of the two countries. Once we understand this strategic problem, we will consider the cheap talk extension. The equilibrium concept throughout our analysis will be (perfect) Bayesian-Nash, where we will require countries’ bargaining—and eventually signaling—strategies be sequentially rational given beliefs and that beliefs are defined by Bayes’s rule wherever possible.

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<sup>2</sup>The choice of two messages is without loss of generality when we are just looking to see if there exists a two element partition of the types of countries by messages consistent with equilibrium. To see this notice that if there were infinitely many messages, say as many messages as types, then the players who are suppose to send the flexible message could randomize over the set of types that send the “flexible” message in the two message equilibrium and the resolved types could do likewise and that would be an equilibrium.

Let  $B_1(v_1)$  be the bargaining strategy of country one and  $B_2(v_2)$  be the bargaining strategy of country two, where  $B_1 : v_1 \rightarrow \mathbf{R}_+$  and  $B_2 : v_2 \rightarrow \mathbf{R}_+$  are countries 1 and 2 respective bargaining positions given their types  $v_1, v_2$ . Given country two's strategy, we can write country one's expected utility of a bargaining position  $b_1$  as

$$Eu_1(b_1, v_1) = \begin{cases} \int_{\underline{b}_2}^{b_1} (v_1 - t(b_1, s))g(s)ds & \text{if } b_1 \geq \underline{b}_2 \\ 0 & \text{if } b_1 < \underline{b}_2, \end{cases} \quad (1)$$

where  $v_1$  is country one's value for keeping the status quo,  $t(b_1, b_2)$  is the transfer—or the amount country one “pays” to country two in order to avoid war—and  $g(s)$  is the density function of country two's demand induced by her strategy  $B_2$  and the distribution of her war values  $F_2(v_2)$ . We also define  $\bar{b}_i, \underline{b}_i$  to be , respectively, the upper and lower support of the distribution of bargaining positions for country  $i$ .

In the same fashion we can write country two's expected utility of a bargaining position  $b_2$  as

$$Eu_2(b_2, v_1) = \begin{cases} \int_{b_2}^{\bar{b}_1} (t(z, b_2) - v_2)h(z)dz & \text{if } b_2 \leq \bar{b}_2, \\ 0 & \text{if } b_2 > \bar{b}_2, \end{cases} \quad (2)$$

where  $v_2$  is country two's payoff to war,  $t(z, b_2)$  is the payment from country one, and  $h(z)$  is the density function of country one's offer induced by his strategy  $B_1$  and the distribution function  $F_1(v_1)$ .

A strategy profile  $(B_1^*, B_2^*)$  is part of a perfect Bayesian Nash equilibrium if they are mutual best responses, given beliefs updated by Bayes's rule where possible. That is  $B_i^*$  will maximize country  $i$ 's expected utility for each type of  $v_i$ , assuming player  $j$  plays  $B_j^*$  and all this implies for the distribution of bargaining positions  $(g(s), h(z))$ .

When we begin thinking about potential equilibria to this bargaining game, one observes that if  $B_1(v_1) < \underline{v}_2$  and  $B_2(v_2) > \bar{v}_1$  for all  $v_1, v_2$ , there exists a “war equilibrium” where war occurs with probability 1. In such a situation neither country has any action they can take that gives them a settlement better than their war outcome. These equilibria exist regardless of the support of the players’ values for the status quo and war.<sup>3</sup> These kind of equilibria will play a role in our analysis below, but it is also important to characterize equilibria where a settlement occurs with positive probability.

A robust property of equilibria where peace occurs with positive probability is that countries’ equilibrium bargaining positions ( $b_i$ ) are increasing in their types. That is, satisfied countries with higher values for the status quo will be more accommodating and dissatisfied countries with higher war payoffs will be more demanding.

**Proposition 1** *In the bargaining game between the satisfied and dissatisfied countries, if there is a positive probability of peaceful settlement in equilibrium then the equilibrium bargaining strategies of country one and country two are increasing in their type,  $v_i$ .  $i = 1, 2$ .*

*Proof:* Suppose there is a positive probability of a peaceful settlement in an equilibrium to a bargaining game and take any two values of the status quo for country one,  $v_1 \neq v'_1$ . Let  $B_1^*(v_1)$  be the equilibrium strategy for country one. From the incentive compatibility of the equilibrium, the expected utility of country one must satisfy

$$\int_{b_2}^{B_1^*(v_1)} (v_1 - t(B_1^*(v_1), s))g(s)ds \geq \int_{b_2}^{B_1^*(v'_1)} (v_1 - t(B_1^*(v'_1), s))g(s)ds,$$

and

$$\int_{b_2}^{B_1^*(v'_1)} (v'_1 - t(B_1^*(v'_1), s))g(s)ds \geq \int_{b_2}^{B_1^*(v_1)} (v'_1 - t(B_1^*(v_1), s))g(s)ds.$$

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<sup>3</sup>As discussed elsewhere, (Fey and Ramsay 2009, Meirowitz and Ramsay 2009, Meirowitz and Sartori 2008), these equilibria are closely tied to the *unilateral war assumption* that in anarchy, any country can start a war anytime.

Combining the inequalities and simplifying gives

$$[v_1 - v'_1] \int_{b_2}^{B_1^*(v_1)} g(s) ds \geq [v_1 - v'_1] \int_{b_2}^{B_1^*(v'_1)} g(s) ds,$$

$$G(B_1^*(v_1)) \geq G(B_1^*(v'_1)), \quad (3)$$

whenever  $v_1 > v'_1$ . As  $G$  is a cumulative distribution function and is non-decreasing,  $B_1^*(v_1) > B_1^*(v'_1)$  whenever equation (3) is strict. If equation (3) holds with equality, we have  $B_1^*(v_1) = B_1^*(v'_1)$  too. To see why, suppose not. That is, without loss of generality suppose there is an equilibrium with  $B_1^*(v_1) > B_1^*(v'_1)$  and  $G(B_1^*(v_1)) = G(B_1^*(v'_1))$ . As  $G(B_1^*)$  is the probability of an agreement and  $G(B_1^*(v_1)) = G(B_1^*(v'_1))$ , a country one with value  $v_1$  could lower his bargaining strategy to  $B_1^*(v'_1)$ , decrease his concession to country two when peace occurs, and not change his probability of war. Thus  $B_1^*$  is not an equilibrium strategy, a contradiction proving  $B_1^*(v_1) = B_1^*(v'_1)$ . This completes the proof that  $B_1^*$  is increasing. A parallel proof applies for country two. ■

This proposition tells us that, in general, equilibria with positive probability of a settlement must be inducing bargaining strategies from our two countries that are increasing. For the status quo country, country one, this means as keeping the status quo becomes more valuable he will take more accommodating bargaining positions. For the dissatisfied country, country two, her bargaining position will also increase in her type, here defined to be the relative value of war. As a consequence dissatisfied countries make larger and larger minimal demands as the payoff to war increases.

It is also possible to prove a simple envelope theorem for our bargaining game, the implication of which is that in every kind of bargaining situation—that is regardless of the beliefs and support for players payoffs—a country's expected utility in equilibrium is almost everywhere changing in exactly the way that strategies induce changes in the probability of peace.

**Proposition 2** (*envelope theorem*) Suppose  $B_1^*(v_1 | [\underline{v}_1, \bar{v}_1], [\underline{v}_2, \bar{v}_2], f_1(v_1), f_2(v_2))$  is an equilibrium strategy to the bargaining game where country one's types are distributed with density  $f_1$  on the support  $[\underline{v}_1, \bar{v}_1]$  and country two's types are distributed with density  $f_2$  on the support  $[\underline{v}_2, \bar{v}_2]$ . Then if there is positive probability of a peaceful settlement in the equilibrium of the bargaining game

$$E[u_1'(v_1)] = \text{Prob}(\text{settlement} | B_1^*, B_2^*)$$

almost everywhere.

*Proof:* Suppose there is positive probability of a peaceful settlement in an equilibrium to a bargaining game and take any two values of the status quo for country one,  $v_1 \neq v_1'$ . Let  $B_1^*(v_1)$  be the equilibrium strategy for country one. From the incentive compatibility of the equilibrium, the expected utility of country one must have

$$\int_{b_2}^{B_1^*(v_1)} (v_1 - t(B_1^*(v_1), s))g(s)ds \geq \int_{b_2}^{B_1^*(v_1')} (v_1 - t(B_1^*(v_1'), s))g(s)ds,$$

and

$$\int_{b_2}^{B_1^*(v_1')} (v_1' - t(B_1^*(v_1'), s))g(s)ds \geq \int_{b_2}^{B_1^*(v_1)} (v_1' - t(B_1^*(v_1), s))g(s)ds.$$

Combining the inequalities gives the following bounds on the differences in expected utilities between the two types,

$$[v_1 - v_1'] \int_{b_2}^{B_1^*(v_1)} g(s)ds \geq E[u_1(v_1) - u_1(v_1')] \geq [v_1 - v_1'] \int_{b_2}^{B_1^*(v_1')} g(s)ds$$

whenever  $v_1 > v_1'$ . Multiplying through by  $[v_1 - v_1']$  and taking limits we have

$$\lim_{v_1' \rightarrow v_1} \int_{b_2}^{B_1^*(v_1)} g(s)ds \geq \lim_{v_1' \rightarrow v_1} \frac{E[u_1(v_1) - u_1(v_1')]}{[v_1 - v_1']} \geq \lim_{v_1' \rightarrow v_1} \int_{b_2}^{B_1^*(v_1')} g(s)ds.$$

$$U'(v_1) = G(B_1^*(v_1))$$

Because  $G(x)$  is the probability of an agreement given a bid  $x$  for country one, we have shown this equality holds for every point of continuity of  $G$ . Applying Lemma 1 from the appendix, we have this equality holding almost everywhere, proving the proposition.  $\blacksquare$

This result implies that in equilibrium any incentive that country one might have to pretend he is a different, more resolved, type is countervailed by the fact that the marginal utility of such a local deception can only be the direct effect of the change in the likelihood of settlement. This means there is no marginal difference between the settlement given the type contingent equilibrium bargaining strategy and the utility associated with some marginally “tougher” type. The reason is that the bargaining position of type  $\hat{v}_i$  has already been chosen—in equilibrium—such that small changes in positions have no effect on utility, this is the definition of what is optimal.

Together the fact that we have equilibrium strategies that are increasing in type and the envelope theorem result immediately imply the following corollary,

**Corollary 1** *In the bargaining game between the satisfied and dissatisfied countries, the probability of peace is increasing in the value of the status quo for country one and decreasing in the value of war for country two.*

We now move on to characterize a linear equilibrium to our bargaining game for uniformly distributed types on any interval of support. These strategies will be the foundation for our analysis of cheap talk diplomacy. We will also now assume the settlement transfers from country one to country two ( $t(b_1, b_2)$ ) take on the form of the  $k$  bargaining power protocol described above. Proposition 3 describes these strategies.

**Proposition 3** *Linear strategies that form an equilibrium to the bargaining game when  $v_1$  is distributed uniformly on  $[\underline{v}_1, \bar{v}_1]$  and  $v_2$  is distributed uniformly on  $[\underline{v}_2, \bar{v}_2]$  are as follows:*

- (i)  $B_1^*(v_1) = \tilde{B}_1(v_1)$  and  $B_2^*(v_2) = \tilde{B}_2(v_2)$  if  $\tilde{B}_1(\bar{v}_1) \leq \tilde{B}_2(\bar{v}_2)$  and  $\tilde{B}_2(\underline{v}_2) \geq \tilde{B}_1(\underline{v}_1)$ ,
- (ii)  $B_1^*(v_1) = \min(\tilde{B}_1(v_1), \tilde{B}_2(\bar{v}_2))$  if  $\tilde{B}_1(v_1) > \tilde{B}_2(\bar{v}_2)$ ,
- (iii)  $B_2^*(v_2) = \max(\tilde{B}_2(v_2), \tilde{B}_1(\underline{v}_1))$  if  $\tilde{B}_2(v_2) < \tilde{B}_1(\underline{v}_1)$ ,
- (iv)  $B_1^*(v_1) = \delta \in [\bar{v}_2, \underline{v}_1]$  and  $B_2^*(v_2) = \delta \in [\bar{v}_2, \underline{v}_1]$  if  $\bar{v}_2 < \underline{v}_1$ ,

where

$$\tilde{B}_1(v_1) = \frac{1}{1+k}v_1 + \frac{k}{1+k} \left[ \frac{(\bar{v}_1 + \underline{v}_2 + k(\underline{v}_2 - \bar{v}_1))}{2} \right], \quad (4)$$

$$\tilde{B}_2(v_2) = \frac{1}{2-k}v_2 + \frac{1-k}{2-k} \left[ \frac{2\bar{v}_1 + k(\underline{v}_2 - \bar{v}_1)}{2} \right]. \quad (5)$$

*Proof:* To prove this result we construct a set of strategies that are linear mutual best responses. This proof generalizes the characterization found in Farrell and Gibbons (1989) to arbitrary  $k$  bargaining problems (they set  $k = 1/2$ ). Applying Chatterjee and Samuelson (1983, Theorem 2) we have that any offer strategy that is bounded, monotone, and differentiable, except possibly at the bounds, must be the solution to a linked pair of differential equations. For arbitrary  $k$ ,  $[\underline{v}_1, \bar{v}_1]$ , and  $[\underline{v}_2, \bar{v}_2]$  a linear solution is

$$\tilde{B}_1(v_1) = \frac{1}{1+k}v_1 + \frac{k}{1+k} \left[ \frac{(\bar{v}_1 + \underline{v}_2 + k(\underline{v}_2 - \bar{v}_1))}{2} \right],$$

$$\tilde{B}_2(v_2) = \frac{1}{2-k}v_2 + \frac{1-k}{2-k} \left[ \frac{2\bar{v}_1 + k(\underline{v}_2 - \bar{v}_1)}{2} \right].$$

Because of the bounds of the support of the types, like Farrell and Gibbons (1989), three cases have to be considered.<sup>4</sup> If the  $\tilde{B}$  strategies imply that no type of either country is sure to settle, then the equilibrium is as in (i). If the use of these strategies would make some types of some country sure to trade, but not all types of both countries, then the strategies are as in (ii) and (iii). It is straight forward to check that the countries' best responses are unchanged on the increasing segment by these modifications of the strategies at the boundaries of offers. Differentiating the new expected utility gives the exact same first order conditions that are used in the proof of Chatterjee and Samuelson Theorem 2. Finally, if the use of  $\tilde{B}$  strategies make all types of both countries sure to settle, then the Chatterjee Samuelson equilibrium breaks down. In these situations there are a continuum of equilibria where settlement occurs at any point between  $[\bar{v}_2, \underline{v}_1]$ . We just pick a point,  $\delta$ . ■

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<sup>4</sup>For the curious reader, you can see that plugging  $k = 1/2$  into these equations gives Farrell and Gibbons' equation (1).

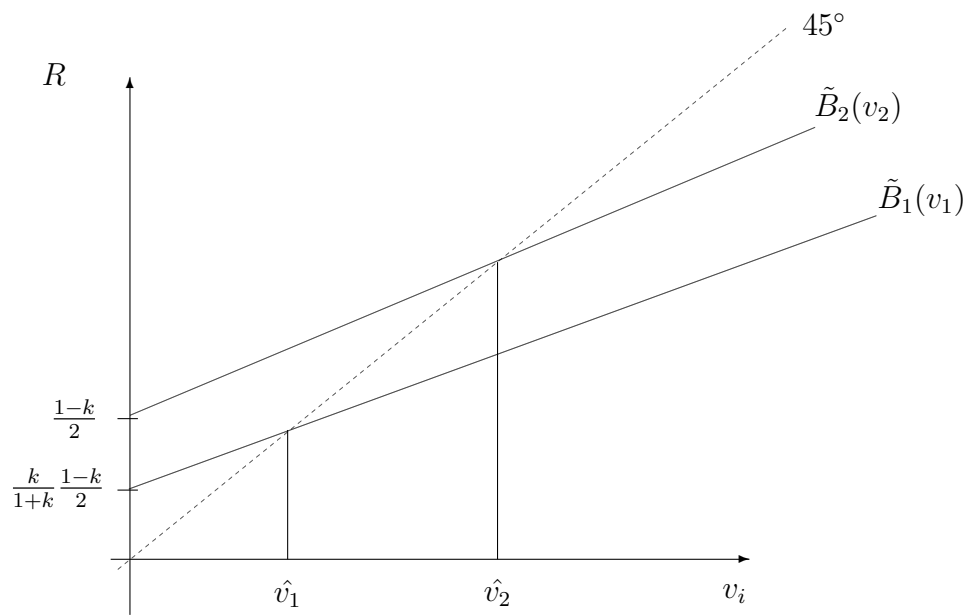


Figure 1: Countries' linear strategies when types are distributed uniformly on the unit interval.

Figure 1 graphs the linear portion of the countries' equilibrium bargaining strategies,  $\tilde{B}_1(v_1)$  and  $\tilde{B}_2(v_2)$ . On the  $x$ -axis is a country's type and on the  $y$ -axis a countries' equilibrium bargaining proposal. The graph of the bargaining strategies shows us a number of things about equilibrium incentives in this game. First, observe that for all  $v_1 > \hat{v}_1$  the bargaining proposal of country one is less than his true value of the status quo. As a result there will exist a number of country one types who end up at war in situations they would not if they honestly reported their values of the status quo. *Ex post*, these types will be worse off. Country two's strategy has a similar property that produces many bargaining positions, all those  $v_2 < \hat{v}_2$ , where she "over plays" her actual value for changing the status quo. In equilibrium, then, a number of country two's types will fight wars they they could have, and would have preferred to, avoid.

One can also observe from the graph that the slopes of these strategies are always less than or equal to 1. Thus neither strategy fully internalizes changes in players' values of the status quo or war in their bargaining positions. Status quo countries always shade their proposals as if they were less eager to settle and dissatisfied countries always shade theirs as if they are more eager for war than their true valuation would suggest.

Finally we observe that the "weaker" country in bargaining, country two for  $k > 1/2$ , always has a steeper and more responsive bargaining strategy than country one. That is, the strategies show that bargaining power leads countries, in a specific sense, to be less generous in their bargaining position. This is because with more bargaining power the outcome is influenced more by the strong country's initial bargaining position. Thus the weaker party loses less by being more generous, conditional on a settlement, than the more powerful country. This leads to marginally less shading of bargaining positions from weaker players in the bargaining stage.

Rolling back to the cheap talk portion of our model, if there are signals that change players beliefs, we will need to know the utility of players for various values of  $[\underline{v}_j, \bar{v}_j]$ . The next step in our analysis is to work through the cases where the bounds of countries values for

war and the status quo overlap in various ways. This will allow us to pin down the relevant utilities for thinking about the effect of cheap talk signals. To start, consider the interim play for types of country one.

Depending on the values of  $v_1$  and  $v_2$ , from country one's perspective, there may be no dissatisfied types of country two that is sure to settle, some dissatisfied type that are sure to settle, or all the types of country two may be sure to settle. This generates three cases. First consider values of country one types such that no type of country two is sure to settle in equilibrium. Rationality implies that country one will offer a settlement of 0 and get a war because it is more costly to buy peace through settlement than country one values the status quo. So for types  $v_1$  such that

$$v_1 \leq \tilde{B}_2(\underline{v}_2),$$

$$v_1 \leq \frac{\underline{v}_2(k+1) + \bar{v}_1(1-k)}{2} = \lambda^1,$$

they offer 0 and get a utility of 0.

At the other extreme, country one might be a type of country such that he is sure to settle in equilibrium, no matter the type of country two. This occurs if

$$\tilde{B}_2(\bar{v}_2) \leq \tilde{B}_1(v_1),$$

$$\frac{1}{2-k}v_2 + \frac{1-k}{2-k} \left[ \frac{2\bar{v}_1 + k(\underline{v}_2 - \bar{v}_1)}{2} \right] \leq \frac{1}{1+k}v_1 + \frac{k}{1+k} \left[ \frac{(\bar{v}_1 + \underline{v}_2 + k(\underline{v}_2 - \bar{v}_1))}{2} \right],$$

$$\frac{2\bar{v}_2(1+k) + \bar{v}_1((k-2)(k-1)) - \underline{v}_2(k^2+k)}{2(2-k)} = \bar{\lambda}^1 \leq v_1.$$

For such types of country one, Proposition 2 says country one's strategy is  $\tilde{B}_2(\bar{v}_2)$  and the utility for such types is

$$\int_{\underline{v}_2}^{\bar{v}_2} [v_1 - (k\tilde{B}_2(\bar{v}_2) + (1-k)\tilde{B}_2(v_2))] \frac{1}{\bar{v}_2 - \underline{v}_2} dv_2,$$

$$= v_1 + \frac{\underline{v}_2(1-k^2) + \bar{v}_1((k-2)(k-1)) + \bar{v}_2(k+1)}{2(k-2)}. \quad (6)$$

Finally, when  $\underline{\lambda}^1 < v_1 \leq \bar{\lambda}^1$  country one has expected utility

$$\int_{\underline{v}_2}^{B_2^{*-1}(B_1^*(v_1))} [v_1 - (kB_1^*(v_1) + (1-k)B_2^*(v_2))] \frac{1}{\bar{v}_2 - \underline{v}_2} dv_2, \quad (7)$$

Where  $B_2^{*-1}(B_1^*(v_1))$  is the inverse function taking country two's bargaining proposals to the set of types that make them. As the strategies are monotone, and strictly increasing when  $\underline{\lambda}^1 < v_1 \leq \bar{\lambda}^1$  and no type of country 2 is sure to settle, this inverse function is well-defined. These three cases correspond to the instances, given  $v_1$ , where there will be no settlement, where there may be settlement, and where settlement will happen for sure. All these cases will apply when  $\underline{v}_1 < \underline{\lambda}^1$ .

When some but not all dissatisfied country types are sure to settle, ( $\underline{\lambda}^1 < \underline{v}_1 \leq \bar{\lambda}^1$ ) all dissatisfied country types below some critical value will be sure to settle with the lowest country one type ( $\underline{v}_1$ ). The utility of the lowest type is then

$$u_1(\underline{v}_1) = \int_{\underline{v}_2}^{\tilde{B}_2^{-1}(\tilde{B}_1(\underline{v}_1))} [v_1 - \tilde{B}_1(\underline{v}_1)] \frac{1}{\bar{v}_2 - \underline{v}_2} dv_2. \quad (8)$$

Then if we let  $U_1$  be the utility described in equation (7) and  $\hat{U}_1$  be the utility represented by equation (6) then for  $\underline{\lambda}^1 < \underline{v}_1 < v_1 \leq \bar{\lambda}^1$ , country one's utility is

$$u_1(v_1 | v_1 \leq \bar{\lambda}^1) = u_1(\underline{v}_1) + \int_{\underline{v}_1}^{v_1} \frac{\partial U}{\partial v_1}(v_1, v_2) dv_1, \quad (9)$$

and for  $v_1 > \bar{\lambda}^1$

$$u_1(v_1 | v_1 > \bar{\lambda}^1) = u_1(\underline{v}_1) + \int_{\underline{v}_1}^{\bar{\lambda}^1} \frac{\partial U}{\partial v_1}(v_1, v_2) dv_1 + \int_{\bar{\lambda}^1}^{v_1} \frac{\partial \hat{U}}{\partial v_1}(v_1, v_2) dv_1. \quad (10)$$

Finally, when all dissatisfied types are sure to settle ( $\bar{\lambda}^1 < \underline{v}_1$ ), as are all types of status quo states, then we are in the situation where the countries reach a mutually agreeable settlement with a transfer from country one to country two of  $\delta$ . The utility for country one is then  $v_1 - \delta$ .

To solve for a possible informative cheap talk equilibrium, we will conjecture an equilibrium strategy and then show what must be true for such behavior to be consistent with

rational play. Our proposed strategy is one where simultaneously country one and country two declare themselves “flexible” or “resolved”, if someone is flexible, then they bargain with the strategies from Proposition 2 and beliefs consistent with Bayes’s rule. If both countries declare to be resolved, then they play the war equilibrium described above, where the status quo country offers a concession less than  $v_2$  and the dissatisfied country demands concessions greater than  $\bar{v}_1$ . This is an equilibrium of the bargaining game and we use it to capture the stylized story that if no side thinks there the other might be willing to bargain seriously, then the sides prefer to settle the dispute by war.<sup>5</sup>

Now assume that the initial distribution of types for country one and two are on  $[0, 1]$ . We can derive what is necessary if there is an equilibrium where country one separates in the way described. For there to be such a cutpoint equilibrium there will exist a critical type  $y$  such that he is indifferent between sending the two signals, all types of country one below the critical type will strictly prefer sending the “resolved” signal, and all the types above will strictly prefer sending the “flexible” signal.<sup>6</sup> To keep things as simple as possible, we focus on “symmetric” messaging strategies where  $Y_1 = 1 - Y_2$ . We then end up with the following equilibrium condition: the expected utility of sending the “flexible” message, given cutpoint messaging strategies  $(Y, 1 - Y)$ , is equal to the expected utility of sending the “resolved” message for the type equal to the cutpoint value. A necessary condition for such

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<sup>5</sup>It is worth noting that—even though this is an equilibrium to our game— it is in weakly dominated strategies. Through the analysis it is clear that if there were costs to bargaining “seriously” then we could put them in this cheap talk model, conjecture the same equilibrium, and not rely on weakly dominated strategies. For our current purposes this will just more complications without any new insights. I, therefore, leave the working out of these details for future research.

<sup>6</sup>Recall that for country one their type is the relative value of the status quo as compared to war, so larger types suffer more from a violent changing of the status quo.

an equilibrium is:

$$\begin{aligned} & (Y_1)u_1(Y_1|[Y_1, 1], [1 - Y_1, 1]) + (1 - Y_1)u_1(Y_1|[Y_1, 1], [0, 1 - Y_1]) \\ & = (1 - Y_1)u_1(Y_1|[0, Y_1], [0, 1 - Y_1]). \end{aligned} \quad (11)$$

To characterize this critical type, first, observe that  $(1 - Y_1)u_1(Y_1|[Y_1, 1], [0, 1 - Y_1])$  only differs from  $(1 - Y_1)u_1(Y_1|[0, Y_1], [0, 1 - Y_1])$  by the fact that the dissatisfied country knows that country one has a higher value for the status quo in the former. Therefore, the latter must be larger than the former and, in equilibrium,  $(Y_1)u_1(Y_1|[Y_1, 1], [1 - Y_1, 1]) > 0$ . This can only be true if there is positive probability of a settlement for the lowest type that sends a “flexible” message when country two claims to be resolved. We then must have that  $Y_1 > \underline{\lambda}_1$ , and thus  $Y_1 > 2/(3 + k)$ . In the subgame characterized by this utility it is also true that  $\bar{\lambda}^1 \geq 1$  and not all dissatisfied countries settle for sure. This means for the indifferent type equation (8) applies and

$$(Y_1)u_1(Y_1|[Y_1, 1], [1 - Y_1, 1]) = \int_{\underline{v}_2}^{\tilde{B}_2^{-1}(\tilde{B}_1(\underline{v}_1))} [\underline{v}_1 - \tilde{B}_1(\underline{v}_1)] \frac{1}{\underline{v}_2 - \underline{v}_2} dv_2.$$

Now looking at the right hand side of equation (11) country one is in the subgame where he has a low value for the status quo and the dissatisfied country two has a low value for war. As  $Y_1 \geq 2/(3 + k)$ , we see that  $Y_1 \geq \bar{\lambda}^1$  and the  $Y_1$  type of country one settles for sure in this case. Also as  $\underline{v}_1 = 0 < \underline{\lambda}^1 = (1 - k)y/2$ , no dissatisfied type of country two is sure to settle and we have the utility associated with equation (6).

Finally, returning to the second element on the left hand side of equation (11), this is the case where both sides claim to be flexible. In this case, if

$$\begin{aligned} Y_1 & \geq \bar{\lambda}^1 \\ Y_1 & \geq \frac{1}{6}(k^2 - k + 4), \end{aligned}$$

then all types of country one and country two settle in this subgame. As we are focusing on symmetric strategies, we assume that the two sides willingly agree to a transfer  $\delta = 1/2$ .

Substituting these values in to equation (11) and solving for  $Y_1$  gives

$$Y_1^* = \frac{\theta(k) + \sqrt{\pi(k)}}{\omega(k)}, \quad (12)$$

where  $\theta$ ,  $\pi$ , and  $\omega$  are polynomials given in the appendix. The above analysis shows that given the messaging strategy with the cut-point  $Y_1^*$ , the bargaining strategies are sequentially rational when the {"flexible," "resolved"} messages are sent and when the messages are {"resolved," "flexible"}. We are left to show that given the described sequentially rational strategies, no type of any player has a profitable deviation.

Following the proof strategy of Farrell and Gibbons, define the difference between the utility of sending the "flexible" message and that "resolved" message for country one by  $D_1(v_1)$  and observe that it depends on the type of country one. That is,

$$D_1(v_1) = yw_1(v_1|[y, 1], [1 - y, 1]) + (1 - y)w_1(v_1|[y, 1], [0, 1 - y]) - (1 - y)w_1(v_1|[0, 1 - y], [0, y]). \quad (13)$$

where  $w_1$  is the expected payoff to the country one type  $v_1$  for playing optimally when the dissatisfied country's type is uniformly distributed on  $[\underline{v}_2, \bar{v}_2]$  and country two *believes* country one's value is distributed uniformly on  $[\underline{v}_1, \bar{v}_1]$ . If  $v_1 \in [\underline{v}_1, \bar{v}_1]$  then  $w_1 = u_1$  as it is described in equilibrium.

For our conjectured cut-point signaling strategy to be a perfect Bayesian Nash equilibrium to our game, we need to show there are no profitable deviations for any type. In particular we must show that  $D_1(v_1) \geq 0$  for any  $v_1 \geq Y_1^*$  and that  $D_1(v_1) \leq 0$  for  $v_1 \leq Y_1^*$ . The strategy is to first observe that  $Y_1^* > 1/2$  and then show that

$$\begin{aligned} D_1(v_1) &\leq 0 \text{ if } v_1 \leq 1/2 \\ D_1'(v_1) &\geq 0 \text{ if } v_1 \geq 1/2. \end{aligned}$$

As the indifference condition from equation (11) means that  $D_1(Y_1^*) = 0$ , these two facts imply that there are no profitable deviations for any type.

First consider  $v_1 \leq 1/2$ . Such a type should report himself “resolved” because he has a low relative value of keeping the status quo, and hence a high payoff from war. If such a type were to report to be “flexible,” and country two reported she were “resolved,” the first piece on the left-hand side of equation (11) is in play. At that subgame country one is *believed* by country two to have a payoff to the status quo (type) of at least  $Y_1^* > \underline{\lambda}^1$  and country two’s minimum bargaining position is

$$B_2^*(1 - Y_1^*) = \max[\tilde{B}_2(v_2), \tilde{B}_1(v_1)] = \frac{1}{1+k}Y_1^* + \frac{k}{2(1+k)}(2 - Y_1^*(1+k)).$$

Substituting and solving for when  $\frac{1}{1+k}Y_1^* + \frac{k}{2(1+k)}(2 - Y_1^*(1+k)) \geq 1/2$ , we see the first term in equation (13) is zero because the minimum settlement country two will accept is larger than country one’s value for the status quo and the sequentially rational action leads to war.

For the case where country one has deviated but country two claims to be “flexible,” country two will propose a settlement of  $1/2$ , which is worse than no agreement for country one and the second element is also zero because there is no bargaining strategies with positive probability of settlement that also has a positive expected payoff for country one. Thus as no subgame ever has negative utility for country one, we have proven the first condition:  $D_1(v_1) \leq 0$  if  $v_1 \leq 1/2$ .

Next consider  $D'(v_1)$  for  $v_1 \geq 1/2$ . By the envelope theorem in Proposition 2 the derivative of each  $w_1(\cdot)$  (the interim payoff) is equal to the probability of a settlement at every subgame. Since types of country one settle for sure in the {“flexible”, “flexible”} subgame, the derivative of the second term in the incentive compatibility condition (13) is  $(1 - Y_1^*)$ . The derivative of the negative term is  $(1 - Y^*)$  times a probability. Therefore equation (130) is the sum of two non-negative numbers and

$$D'_1(v_1) \geq y\left(\frac{dw_1}{dv_1}(v_1)\right) \geq 0 \text{ if } v_1 \geq 1/2.$$

This completes the argument that there is no profitable deviation for country one, and as a symmetric argument shows the same for country two, we have proved these messaging and

bargaining strategies are a perfect Bayesian Nash equilibrium. We summarize this result in the following proposition,

**Proposition 4** *Suppose players types have initial distributions that are uniform on the interval  $[0, 1]$  and play the equilibrium strategies characterized in Proposition 3, then there exists an informative semi-separating perfect Bayesian-Nash equilibrium to the crisis bargaining game with costless pre-play diplomacy where:*

- *There is a cutpoint  $Y^*$  and all types of country one with values for the status quo below  $Y^*$  say “resolved” and all types with values above  $Y^*$  say “flexible”;*
- *There is a cutpoint  $1 - Y^*$  and all types of country two with values for war below  $1 - Y^*$  say “flexible” and all types with values of war above  $Y^*$  say “resolved”;*
- *If both countries claim to be “resolved” country one plays the war bargaining strategy of setting his bargaining position to 0 and country two likewise takes the bargaining position 1;*
- *if both countries claim to be flexible, both countries declare their bargaining position of  $1/2$  and country one settles with country two at that value with probability 1;*
- *If only one country says “flexible” then players play the equilibrium strategies from Proposition 3 above;*
- *And in every instance countries beliefs are consistent with the strategies and Bayes’s rule.*

In sum, Proposition 4 characterizes the single step cheap talk equilibrium for our bargaining problem with uniformly distributed types. A number of things happen in this equilibrium: countries use cheap talk messages to coordinate equilibrium play in each subgame, countries truthfully reveal information to their opponents about their relative values of the

status quo and war, and the *ex ante* probability of war changes as a result of the messaging strategy. That is, diplomacy in a world with voluntary negotiations—in that countries can choose to play strategies where they do not bargain seriously if they become discouraged by the diplomatic exchange—leads to informative and meaningful cheap talk. In particular, the game produces distributions over outcomes and equilibrium actions that cannot be played as equilibrium without the pre-bargaining negotiations.

## 4 DISCUSSION

Beyond showing the existence of equilibria where simple cheap talk diplomacy reveals private information, the model has additional empirical and theoretical implications. Taking the empirical implications first, we observe that the messaging cut-point varies with the bargaining power of the countries. Under the assumption of symmetric uniform distribution of types and linear strategies, the cut-point varies about five percent of the range of the values of  $k$ . It runs from approximately .777 when  $k = 1/2$  to approximately .750 when  $k = 1$ .<sup>7</sup>

On the other hand, and perhaps of more interest, the cut-point is monotonically decreasing (non-linearly) in bargaining power. This means that as bargaining power of one player increases, in an opposite fashion as the effects of bargaining power on bargaining strategies, “stronger” countries are more likely to use the “flexible” accommodating message while “weaker” countries are more often going to claim they are resolved. This observation is consistent with the stylized facts. As mentioned above, “weak” states often make diplomatic statements that seem very extreme—and often take the resolved stance—while strong countries rarely make very bold or overtly hostile diplomatic claims. That is, strong countries often

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<sup>7</sup>In a previous version of this paper it was easy to prove that for  $k = 1$  ultimatum games any cut-point in  $[0, 1]$  could be sustained as an equilibrium cut-point to this game. Details have been omitted due to space constraints.

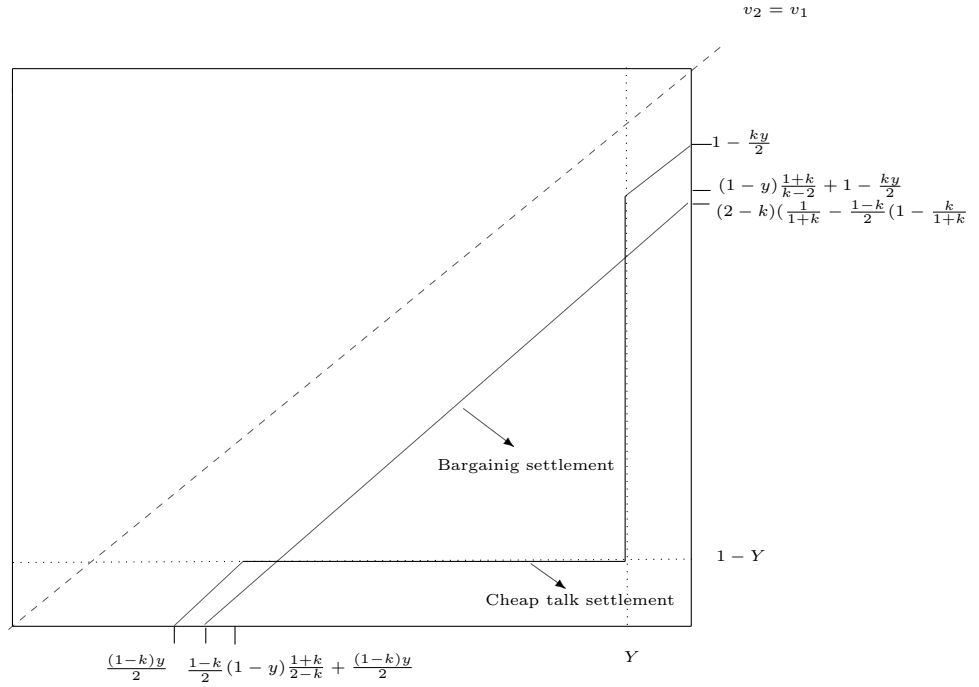


Figure 2: Probability of war with and without cheap talk:  $k$  near  $1/2$ .

are more likely to take “flexible” diplomatic positions and often call for negotiations and a search for peaceful solutions. On the other hand, when it comes to the actual negotiations the “strong” country seems much less willing to give ground in many circumstances. This strange pattern of behavior is rationalizable in the presence of our cheap talk analysis and they are connected phenomenon. The reason states with more bargaining power are more willing to get the bargaining stage is that they have more control over outcomes once they get their, as their bargaining stance is more important in determining the settlement. On the other hand, weak countries are less keen to bargain because they know that once bargaining begins, conditional on a settlement, they will be less able to influence the terms of agreement.

Theoretically, it is important to point out the connection the result in this paper has

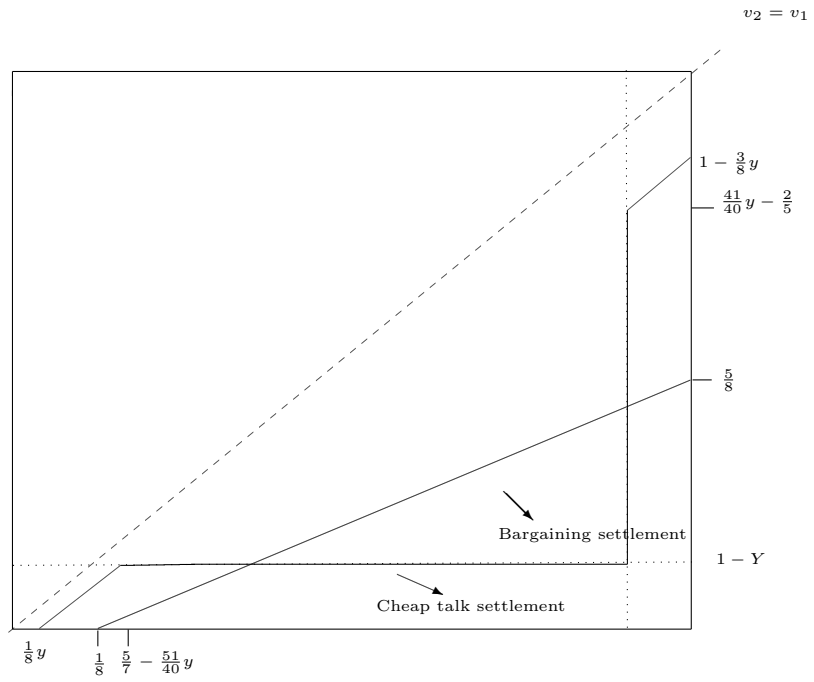


Figure 3: Probability of war with and without cheap talk:  $k = \frac{3}{4}$ .

to the paper by Sartori. In many ways the two results are similar. In the Sartori model, the effect of the cheap talk strategy was to coordinate on different equilibria when false claims were learned to have been made. The ability to generate informative equilibria in that setting depends on a reversion to a Nash equilibrium where liars are punished for their dishonest behavior. Importantly, Sartori's result rests on the dynamic and long-run nature of the interactions between states and the existence of such a punishment equilibrium. The situation we analyze is different in that it is one-shot, but it is useful to observe that in the one-shot environment informative cheap talk diplomacy rests on a similar type of equilibrium reversion. If both countries claim to be resolved then countries focus on the conflictual equilibrium and they get war. If at least one country is willing to extend a message of compromise, then negotiations go forward. Sometimes there is a settlement, sometimes there is still war, but attempts are made to reach agreements.

At some level, the requirement that countries revert to the war equilibrium after both send resolved messages is not completely satisfying. While, if one wants to assume that any country can unilaterally start a war at any time, such equilibria are always available to construct this kind of cheap talk equilibrium this subgame does play an equilibrium in weakly dominated strategies. It seems clear that if we were to include some cost for "serious" negotiations—as negotiating for real is a costly activity that may not always be worth while—we could construct this equilibrium with informative cheap talk. But it is worth pointing out that part of the reason why the "incentive to misrepresent" exists in the simple ultimatum game is that country one is *committed* to make a proposal to country two, even if after talking he did not want to. That is, the standard model makes a different assumption, in particular that there is no *potential* consequence for taking crazy diplomatic positions. This assumption does not seem much better, and the truth probability falls somewhere in between.

Finally, there is an unexpected consequence of cheap talk in our model. Like the informative cheap talk equilibrium in Sartori, our equilibrium has a higher probability of war than

the equilibrium with no cheap talk. This is against the general expectation that if countries were able to share some information that welfare would increase and warfare would decrease. To see this one can look at Figure 3. This figure is very similar to one found in Farrell and Gibbons. It is clear to the naked eye that the little extensions of the zone of settlement one gets from this equilibrium will not compensate for the settlements missed in the big triangle in the interior of the lower half of the type space. That Farrell and Gibbons got this result, that the *ex ante* probability of war was higher with cheap talk, was not completely surprising. An implication of Myerson and Satterthwaite (1983) was that of all the bargaining games one could choose in the symmetric uniform case, the  $k = 1/2$  bargaining protocol and the linear strategy maximized social utility and the probability of peace. What they never spoke to, and what we are able to show in Proposition 5, is that for every bargaining power the cheap talk equilibrium always has a higher probability of war. This is somewhat surprising given that it is not clear that one could not generate bargaining situations, like those in Figure 4, where the bargaining power made the non-cheap talk settlement triangle small enough that the tails of the cheap talk settlements more than made up for the loss. Proposition 5 shows this is never the case.

**Proposition 5** *In the bargaining game between the satisfied and dissatisfied countries, the ex ante probability of peace is greater in an equilibrium without cheap talk than in the equilibrium with cheap talk.*

*Proof:* Suppose not. That is suppose that the probability of peace in a cheap talk equilibrium was larger than in the non-cheap talk equilibrium for some bargaining power and the corresponding cut-point. This means there exists some pair  $(k, y)$  such that the difference between the two probabilities is positive. The proof follows from the fact that the maximum of the difference between the probability of peace in the cheap talk equilibrium and the non-cheap talk equilibrium over the parameters  $k \in [.5, 1]$  and  $y \in [.75, .79]$  occurs when  $k = 1/2$  and  $y = .75$ . Substituting in these values, the probability of a settlement under the

cheap talk equilibrium is .281 and under the non-cheap talk equilibrium is .281, generating a difference of zero. As the difference is zero at the maximum, there is no such value of  $(k, y)$ , a contradiction, proving the result. ■

This result does beg the question: then why do we care about diplomacy? While beyond the scope of this analysis it would be interesting to know if there are any cases where cheap talk can make the probability of war go down.

## 5 SIMPLE DIPLOMACY IN HISTORY

Do we see countries often make statements that can be, and are, interpreted as being conciliatory? A number of historical examples come to mind where countries use simple diplomacy and compromising messages to avoid unwanted wars. In this section we outline a few cases where the incentive to get one's rival to the bargaining table leads to compromising diplomatic strategies, which should not exist if the traditional model of simple diplomacy is correct.

### 5.1 GERMANY AND GREAT BRITAIN IN EAST AFRICA

Between 1860 and the mid-1880s the island of Zanzibar and its coastal provinces, then under the flag of Sultan Barghash, grew in importance to both Germany and Great Britain. For Germany the exploration and development of colonial prospects in the hinterlands behind the coastal holdings of the Zanzibar Sultan brought to the foreground the importance of German influence in the Zanzibar court (Merritt 1978). Also, as a result of the island's strong ties with Britain, India, France and the US, Zanzibar had become the principle entrepôt for the growing east African trade in ivory, rubber, and locally grown cloves. For Britain the Kingdom of Zanzibar was equally important as a strategic asset. Through its territorial holdings, Zanzibar provided a safe haven for British shipping coming from India around

Cape Colony, as well as a buffer for the Nile basin from intrusion by other European powers (Robinson and Gallagher 1961). This barrier on the east coast of Africa was seen as vital for the protection of Britain's position in Egypt, especially with respect to French colonial designs (Langer 1951, Lovell 1934).

The East African question became complicated when, in 1885, a new generation of African explorers from Germany, France, and Britain discovered two regions near Zanzibar that were good prospects for colonial development. The first was the plateau surrounding Kilimanjaro, the second was the highlands near Mount Kenya. Both of these lands fell under the nominal jurisdiction of the Sultan of Zanzibar. In an attempt to head off any conflicts that may arise between German and British over claims in the region of the Nile basin, the British Foreign Minister, Lord Salisbury, proposed a partition of the mainland. This partition would define two spheres of influence in East Africa, one German and one British (Pakenham 1991, p.294). The line of demarkation ran west from the Usambara region to Mount Kilimanjaro, skirted the mountain, and continued to the north east region of Lake Victoria. All land to the south would be under German protectorate, while land to the north would fall under British control.

The stage was set for the 1890 conflict between Germany and Great Britain because, while the first partition of East Africa had settled issues in the region east of the East African lakes, it said nothing about how far west each sides respective sphere reached. As a result a vast track of land, in particular the coveted region of Uganda, was officially still up for grabs. Moreover, there were also conflicts over the northern and southern boarders of the two powers' spheres of influence.<sup>8</sup>

So, as long as the protectorates established by the 1886 agreement were simply paper

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<sup>8</sup>While the southern boundary of the German sphere had at least a potential boundary, i.e., Cape Colony and the Portuguese holdings in Mozambique, there was no such natural end to the British sphere in the north.

empires at the outer edges of the established spheres of influence, all was well. But such a situation was not to last for long. As the 1880s came to a close, a push north toward Uganda by the German explorer, Karl Peters, brought the inevitable conflict to the foreground.

In the summer of 1888 explorer William Mackinnon and the British representative to Zanzibar, John Kirk, learned that Peters had been commissioned by a group of German colonialists to lead an expedition beyond the German sphere. In particular, Peters was after Uganda and hoped to capture both the fertile land north of Lake Victoria and the headwaters of the Nile for Germany. Britain also chartered an expedition to claim this territory, but was significantly less successful.

The race for Uganda had emerged in the British press with claims that having Germans on the Nile was a grave security concern. In London, Salisbury grew uneasy and approached Berlin in hopes of finding an amicable agreement, while at the same time he encouraged the Imperial British East Africa Company to send more troops to Uganda. While it not clear how close the Ugandan crisis came to an armed confrontation between German and British sponsored troops, it is clear that both sides hoped to avoid open conflict. On the one hand, the Germans were hoping to form an alliance with Britain against Russia and France (Taylor 1987) and knew that any conflict in Africa could only go badly. This was especially true given Britain's ability to project power with their navy (Gillard 1960). On the other hand, Salisbury and others in London knew that a falling out with Germany over East Africa could only cause harm.

In March, the young Kaiser Wilhelm II ended the reign of Bismark. His replacement, Georg von Kaprivi then made a public statement professing his government's friendship for England (Pakenham 1991, p.355). However, this change in government motivated Salisbury to open diplomatic discussions about the East Africa problem. In late April, he sent the foreign office's Africa hand, Percy Anderson, to Berlin to work on the details of a settlement.

By May of 1890 it was clear in London that Peters's group had won the race for Uganda. Word arrived that he had signed an agreement with King Mawanga of Uganda making

Germany protector of his kingdom. All that was left was for the government in Berlin to make the agreement official. However, even in the face of this advantage Count Hatzfeldt, the Kaiser's representative in London, wrote Salisbury an encouraging note. While Hatzfeldt reiterated the dangers that could result from uncontrolled expansion during negotiations, the German government proclaimed its willingness to resolve the Uganda issue in a way suitable to Britain through negotiations (Gillard 1960, p.648). The German's position was further confirmed by word from Anderson in Berlin.

The Zanzibar dispute was then resolved with a somewhat complicated negotiated settlement that included: a small island off the coast of the Kiel Canal in the North Sea, the small East African protectorate of Witu, and a demarkation of the German sphere, which would run parallel of one degree south from Lake Victoria to the Congo. Moreover, as Taylor (1987) writes, "[t]he agreement had the rare quality of satisfying both parties."

Noticeably absent from the diplomacy that preceded the settlement was the blustering claims that one might expect given the incentive to misrepresent. There was also no evidence that the German or British leadership was weighing the costs and benefits of revealing their willingness to negotiate in light of future concerns regarding their diplomatic reputations. Finally, there was little evidence that audience costs enter the calculations of the decision makers on either side. While it is not beyond reason to suppose that an escalation of the crisis, and a subsequent capitulation, would have generated domestic political consequences, future agreements suggest that audience cost may not have been that important. For example, after years of public disagreements with the French over colonial empires in Africa— which would have likely generated such audience costs — Salisbury took steps to reconcile their differences. In particular, he signed an agreement in August of 1890 giving the French rights over nearly a quarter of the African continent, including several million square miles of the Sahara. All of this was done without much fanfare.

## 5.2 THE FIRST PARTITION OF POLAND

Similar to the case in east Africa, the diplomacy surrounding the first partition of Poland provides evidence of the effectiveness of simple diplomacy in the shadow of war.

The origin of the partition of Poland can be traced back to the initiation of the Russo-Turkish war in 1768. Four years earlier, under the pretext of protecting Orthodox and Protestant religious groups from Catholic discrimination, Tzarina Catherine of Russia sent troops into Polish territory (Kaplan 1962, p.33). While this intervention was welcomed by the Polish King Stanislas Augustus, as it protected his throne, the intervention inspired insurgent uprisings against the crown. In the processes of putting down the insurgents, a Cossack military unit under Russian command crossed the Polish boarder and attacked the Ottoman town of Balta-Liman. Upon news of this transgression, the Porte— as the government of Sultan was called— declared war on Russia.

The decision to turn this relatively minor transgression into a full scale war turned out to be a significant policy error on the part of the Turks. Quickly Russia won numerous battles, gained control of significant amounts of territory, and was poised to capture lands near the Black Sea and in the Balkans. Such gains for Russia made a wider European war much more likely, as these gains posed a significant strategic threat to Austria in Eastern Europe (Schroeder 1994, p.13).

With the Seven Years' War fresh on the minds of statesmen, every country in Europe feared the possibility that the Russo-Turkish war would lead to a general European war. Even though no one desired such a conflict, the path to war was easy to imagine. On the one hand, it was clear to all that Austria would be willing to fight in order to prevent Russia from gaining Ottoman territory adjacent to their boarders. This would pull Austria into a war with Russia in order to protect Turkey. Moreover, since Austria would have to attack Russian forces, such a turn of events would activate the alliance between Prussia and Russia, requiring Prussia to provide financial support to the Russian war effort and likely result in a

direct Austrio-Prussian fighting in Germany. This is to say nothing of the distinct possibility that Austria would be able to persuade France to join them in protecting Turkey, its long time ally.

Matters were complicated by the fact that Russia was unwilling to negotiate with Austria over potential compensations for Russian gains in Turkey. According to Count von Solms-Sonnenwalde, the Prussian ambassador to Russia, any agreement to avoid war between Austria and Russia would require a mutual faith which did not exist, as the Russians questioned the sincerity of their counter-parts in Vienna (Kaplan 1962, p.113).

It is clear, however, that Prussia and Austria wished to avoid a widening of the Russo-Turkish conflict. As such, Frederick of Prussia and Joseph II, the Holy Roman Emperor and co-regent of the Habsburg throne, met at Neisse in August of 1769 where the two German powers agreed that neither wanted to see a war spread to the regions of the Empire. Further, Joseph II encouraged Frederick to send word to the Russian Tzarina of both German courts' interests in seeing an end to the Russo-Turkish war and a resolution of the problems in Poland (Lukowski 1999, p.54).

In the back ground of the meeting at Neisse, Russia's campaign in Turkey was going almost too well. By September, the Russians were in control of Jassy and Bucharest was occupied by Christmas. While Frederick hoped that these quick victories would lead to the establishment of a stable peace with the Porte, such hopes were dashed when the Russian fleet was moved from the Atlantic to the Mediterranean.

The mutual desire to avoid widening the conflict between Russia and Turkey led to a second meeting between Frederick and Joseph, which took place at Neustadt in September of 1770. While no formal documents were signed at Neustadt, the desire for peace and an end to the Turkish war were the topics of discussion. In particular, both countries firmly committed to a plan to mediate the Russo-Turkish conflict. Both sides understood that if Russia continued to prosecute the war at its current pace, war with Austria was inevitable. This second meeting resulted in a letter from Frederick to Russia restating the position

of Prussia and Austria. Moreover, Turkey now supported mediation and a resolution of the current war (Lukowski 1999, p.60).

Frederick's correspondence yielded a kind response from the Tzarina which recognized the German courts' desire for peace and the bringing about of a fair resolution for Russia. Yet, even given this good will, Russia was still unwilling to accept mediation of the dispute. The real complication was that, even though Russia was gaining decisive victories in Turkey, the civil/international war in Poland made a direct resolution of the Turkish problem complicated. As such, the problem in Poland was inseparable from a resolution of the Turkish question.

By October of 1770 Frederick's brother, Prince Henry, had arrived at St. Petersburg in order to begin a discussion of how to forestall or eliminate the possibility of a direct war between Austria and Russia. Again, there was a discussion of the Porte's desire for mediation, but foremost on the mind of the Tzarina was Poland. As a result of the encouraging signals received from the German courts, Catherine warmed to the idea of a settlement and entertained proposals that worked toward those ends (Kaplan 1962, p.134).

Henry's plan suggested that the major Eastern European powers compensate themselves for Russia's gains in Turkey with strategic and economically value portions of Poland.<sup>9</sup> The idea of partitioning Poland was somewhat warmly received in St Petersburg, but it was unclear how such a plan would be received in Vienna. As a result, Russia and Prussia came to an agreement as to what portions of Poland they would each take and they decided to notify Austria of their intentions once an agreement was reached. If Austria were to object, she would be offered the opportunity to take a share of Poland for herself. If such an offer was rejected, then Prussia and Russia would take their shares by force.

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<sup>9</sup>Perhaps surprisingly, the impetus for the agreement to partition Poland came from Austria, the one country that was most opposed to its dismemberment. Particularly, the plan gained credibility when Austria occupied the county of Zips.

When Austria was notified of the intentions of Russia and Prussia there was a mild protest, but Maria Theresa decided that given the choice between peace with compensation in Poland and a war over Turkey, the partitioning of Poland was the less of two evils (Kaplan 1962, p.165). In fact, by the end of the negotiations Austria was to end up with the lion's share of the three eastern European powers.

The most important aspect of the partition was that it was carried out fairly peacefully and done in the spirit of cooperation. In particular, this agreement was the thing most responsible from keeping a war already underway from expanding into another greater European conflict. As Schroeder (1994) points out, the partition is a canonical example of eighteenth-century cooperation. Moreover, the cooperative and encouraging nature of the diplomatic notes and statements among Prussia, Austria, and Russia made the pursuit of an agreement possible. It is also clear, that in the absence of such an accommodating positions of the eastern European courts the Russo-Turkish war would have lead to conflict between the eastern states, and possibly would have drawn in western European powers like France and Great Britain.

This case is also interesting because the confounding factors that one may be able to argue influence the credibility of diplomatic speech seem to be absent. First, the audience costs mechanism is absent in the three principle countries. In each case, the governments were absolute monarchs whose legitimacy was based on succession. As a result, the domestic punishment mechanism was absent. In fact, many of these governments frequently used violence to repress dissent and were quite well established in their respective seats of power. Additionally, much of the diplomacy that occurred among the three eastern courts took place in private. That is, the necessary condition from the audience cost argument, i.e., that public diplomatic statements create expectations regarding a country's behavior, were not a significant part of the interaction between the disputing parties.

Second, there is the issue of reputation. On it face, it has been argued that in the era of the first partition of Poland, trust worthiness was not highly valued or of high concern. As

Schroeder (1994, p.7) points out, statesmen spent as much time trying to calculate at what point their allies would defect from their agreements as they did calculating how the current alliance relationships influenced the balance of power. In fact, the partitioning of Poland represented the breaking of an agreement that guaranteed the territorial integrity of Poland itself.

So, in addition to operating in a political climate where a reputation for honesty was of little concern, there is no evidence that reputational concerns pushed Austria, Russia, or Prussia to avoid making exaggerated claims in Poland or Turkey. Quite to the contrary, the historical record reveals that the concern for reaching a peaceful agreement, and avoiding any diplomatic or policy position that closed the door to a peaceful resolution of the principles' conflicting interests, as being in the forefront of the calculations of statesmen.

From the events surrounding the East African crisis and the first partition of Poland, it appears that at least some of the time simple diplomacy, defined as non-costly, unverifiable statements about a countries preferences, can be effective in encouraging the peaceful settlement of disputes. In the East African case, neither German nor Great Britain wanted war. Toward this aim, both sides actively attempted to convince the other that a negotiated settlement was worth pursuing and was conscience that the consequence of taking extreme diplomatic positions may undermine the opportunity to negotiate at all. We find a similar set of circumstances in the case of the Polish partition. Here simple, and sometimes secrete, diplomacy played an important roll in bringing Russia to the bargaining table. The encouraging and peaceful overtures from Prussia and Austria, as well as the Russian proposal to include Austria in the partition agreement, changed the nature of the crisis resulting from the Russo-Turkish war. The negotiated settlement among the eastern European powers moved Prussia, Austria, and Russia from the brink of war to a situation where the conflict between Russia and Turkey was to remain bilateral. Moreover, in both the East African and Polish crises, secondary consequences of diplomacy were either not present or not major concerns for the leaders involved.

While the cases of Great Britain and Germany in East Africa and the first partition of Poland provide interesting examples of simple diplomacy at work, they are by no means the only cases. In more recent history we can find similar examples. For instance, both Chamberlain's diplomacy during the Munich crisis and the 1960-61 Berlin crisis reveal a similar story. In Munich, the driving motivation for Chamberlain's desire to reach some kind of accommodation with Hitler was to avoid war. For example, Chamberlain told the German ambassador in July of 1938 that his government "should not consider Great Britain as accepting the inevitability of forceful action even in the face of Czech provocation" (Schmitt 1953, p.170). Furthermore, in October Chamberlain's offer to discuss with Hitler "arrangements for transfer [of the Sudeten areas] with you" (Schmitt 1953, p.176) was at least partially responsible for Hitler to agree to the conference at Munich and put off his plans for military intervention. Similarly, the 1960-61 Berlin crisis forced the superpowers to explicitly confront the question of whether or not Berlin was worth nuclear war. As Gaddis (1997) points out, this time the US and Soviets managed to agree that it was in their interests to avoid such a nuclear conflict, to communicate this fact to each other, and to devise a mutually tolerable, if not optimal, solution to the question of Berlin.

## 6 CONCLUSION

The fundamental puzzle that has driven much of the recent rational choice analysis of diplomacy has been the apparent costless nature of diplomatic communication. If diplomacy is a costless signal, i.e., it implies no commitment to take any action and doesn't directly influence the payoffs of countries, the current received wisdom claims that there is no reason to expect diplomatic communications to contain any useful information about a country's resolve. The reason diplomacy presents such a puzzle is that there appears to be no rational reason for low resolve countries not to mimic or imitate high resolve countries in their communication, especially if low resolve countries expect to extract more concessions from

convincing their opponent that they have high resolve (Fearon 1994, Martin 1993). Here we show that even if we constrain our analysis to the current crisis situation, diplomatic cheap talk can matter if the possibility of improving a countries payoffs through negotiations is tied to the countries' willingness to take a compromising initial position. This is true even though making such an overture is not costly for the country looking to induce negotiations.

So what exactly does cheap talk do in our diplomacy game? In our model diplomacy serves two functions. First, the messages convey information about their resolve. When countries says that they are willing to compromise, their opponents learns that country's reservation payoff is constrained to fall below the critical equilibrium value identified by the messaging strategy. In this way the diplomatic exchange does exactly what intuition says it should do: it conveys essential information. Second, the diplomatic message is a coordination device. It lets the countries coordinate their efforts on negotiations. In this way the intuition of this result is very similar to other well known results like Sartori (2002). The difference is that our result does not depend on the dynamics of reputation.

On the other hand, it is somewhat surprising that in crisis bargaining games there exist equilibria where pre-bargaining diplomacy matters. This is especially true given what we know from the existing literature on informative cheap talk signaling (Crawford and Sobel 1982), i.e., in the negotiation stage the countries have strictly opposed preferences over outcomes. Yet it is important to note that if we take the idea of anarchy seriously, and thus assume negotiations are a choice, then the common interest in reaching a settlement creates an obvious incentives for countries to tend toward conciliatory diplomatic positions. The difference between our result and the received wisdom in rational choice theory is that in other models there are no consequences for outlandish diplomatic behavior. In these models the informed country's diplomatic strategy has no influence on the willingness of their opponent to participate in serious negotiations. What we have shown is that, when we consider how diplomatic statements may influence the willingness of the parties to pursue a peaceful settlement, an endogenous constraint arises where countries sometimes find it

in their interest to pursue a conciliatory diplomatic policy and, therefore, leave open the opportunity to avoid a costly conflict.

Our analysis shows that the pessimistic conclusions about the effects of diplomacy that exist in the rationalist theory of crisis bargaining are not as severe as they may appear at first. While other work—incorporating concerns for domestic consequence of foreign policy statements and reputation—has gone a long way toward establishing the relevance of communication in crisis settings, there is more that can be said. Even absent these factors, a view of diplomacy as information exchange in pursuit of a common objective is consistent with a rationalist view of international politics. We are able to show, using our simple diplomacy game, that even in a single-shot crisis situation diplomatic communication can play an important role in helping countries coordinate on pursuing peaceful settlements to disputes.

## A APPENDIX

**Lemma 1** *Take any probability of settlement  $G$ , where  $G(x) = \int_{b_2}^x g(t)dt$ , with  $g(x)$  an non-negative function on bounded support as described in the text. Then  $B$  is almost everywhere continuous.*

*Proof:* Suppose  $G(x) = \int_{b_2}^x g(t)dt$ . As  $g(x)$  is a non-negative we know  $G(x)$  is monotone increasing and, because it is the probability of settlement given  $x$ , it has a bounded range. Clearly, a necessary condition for the range of  $G$  to be bounded is that the accumulation of the upward discontinuities must be finite. We now prove that this means the the number of discontinuities is countable. To see why, suppose not. That is, suppose  $G$  is increasing, the range is bounded, but there are uncountably many jumps. By the fact that  $G$  is increasing we know that all jumps are positive. Let  $J$  be an index set such that we can label each jump. As  $J$  is uncountable, we can write the generalized sum of these jumps using

$$\sum_{j \in J} a_j = \sup \left\{ \sum_{j \in A} a_j \mid A \text{ is finite and } A \subset J \right\}.$$

That is, define the sum over the index set to be the supremum over all sums of finite subsets of  $J$ . This agrees with the usual definition of sum in the standard setting and generalizes to uncountable index sets.

Now let  $A_0 = \{j \in J \mid a_j \geq 1\}$  and  $A_n = \{j \in J \mid 1/n > a_j \geq 1/(n+1)\}$ . By standard convergence results, if any of these  $A_n$  are infinite then the sum will diverge on that set, violating the bounded range of  $G$ . If all the the sets are finite, then their union is a countable set, contradicting that the set of positive jumps is uncountable. Therefore, there are countably many jumps in  $G$  and it is almost everywhere continuous. ■

The explicit solution for the cutpoint is

$$Y_1^* = \frac{-2 + k^4 - 7k^2 + 26k + 2k^3 + \sqrt{k(-2 - 7k + 7k^2)(2 - k)^2(1 + k)^3}}{-7k^3 + 40k - 2 + k^5}$$

with  $\theta$ ,  $\pi$ , and  $\omega$  being the various separate polynomials found in the text.

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