Military Coercion in Interstate Crises and the Price of Peace

Branislav L. Slantchev*
Department of Political Science, University of California – San Diego

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Abstract. Military mobilization has a dual role in crisis bargaining: it simultaneously sinks costs (because it must be paid for regardless of the outcome), and ties hands (because it increases the probability of winning should war occur). Existing studies neglect this dualism and cannot explain signaling behavior and tacit bargaining well. I present a model that incorporates this dualism and show that many existing conclusions have to be qualified. General results that relate the probability of war to an informed player's expected payoff from war do not extend to this environment. Because military means function in a way akin to audience costs but do not depend on regime type, foreign policy theories relying on signaling ability that depends on domestic political institutions face a serious challenge in explaining state crisis behavior. The model also provides a new two-step rationalist explanation for war illustrated by the Chinese entry in the Korean War.

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> "Preparation for war does not make war inevitable. On the contrary, prudent preparation for war, accompanied by a wise policy, provides a guarantee that war will not break out except for the gravest of reasons."
>
> Count Sergei I. Witte.[1]

1 Introduction

In an international crisis, states make demands backed by threats to use force. While these threats are often explicit in diplomatic communications, they will not generally carry much weight unless substantiated by some show of force—military measures designed to convey the commitment to resort to arms if one's demands are not satisfactorily met. To have an impact, this commitment must be credible; it must be in one's interest to carry out the threat if the opponent refuses to comply. In an environment where states possess private information about their valuations, capabilities, or costs, credibility can be established by actions that a state unwilling to fight would not want, or would not dare, take. Military activities that states undertake during a crisis simultaneously entail immediate costs and increase their chances of prevailing in war. While the positive impact these activities have on the expected utility of fighting should make then a tempting instrument in a crisis, their very costliness may inhibit incentives to bluff.

This article presents a dynamic crisis bargaining model in which actors are asymmetrically informed about the value of the disputed issue and make military mobilization choices before deciding whether to attack or not. While mobilization is costly, the mobilization levels also determine the probability of military victory if the crisis breaks down in war. This empirically motivated construction departs significantly from all existing models that treat this probability as exogenously fixed. Such models cannot investigate the consequences of state crisis behavior without seriously distorting the incentives actors face. Perhaps not surprisingly, the analysis leads to several modifications of theoretical generalizations produced from such models. The benefits of this formalization are also substantive as the findings offer an explanation for war that may overcome some of the weaknesses in our existing rationalist accounts.

First, the formalization brings together two distinct mechanisms for credible signaling. In economic models, reliable information transmission can be established by sinking costs—actors essentially burn money to reveal that they value the disputed issue even more. In contrast, theories of interstate crisis bargaining usually rely on choices that increase the difference between backing down and fighting—actors essentially tie their hands by running higher risks of war to reveal their resolve. While the first mechanism involves costs that actors pay regardless of outcome, the second involves costs that actors pay only if they fail to carry out some threat or promise.

As I shall argue, military actions have *both* cost-sinking and hands-tying effects, and hence it is imperative that our theories account for that. Focusing only on the cost-sinking role has lead scholars to dismiss mobilization as a useful signaling device (Jervis 1970, Fearon 1997, Rector 2003), shifting the focus to mechanisms that have hands-tying effects. Audience costs are the most prominent example of such a signaling mechanism

[1] For Witte's comments on the road to the Russo-Japanese War, 1904-05, see Harcave (1990, pp. 308-09).

(Fearon 1994) and much work has been done on exploring the role of public commitments.[2] Because open political contestation is a feature of democratic polities, democratic leaders are said to be better able to signal their foreign policy preferences, which in turn provides an explanation of the democratic peace.

This analysis corroborates the conclusion that tying hands can be an effective (but limited) way of establishing the credibility of one's commitments. This is in keeping with the audience costs argument. However, contrary to this argument, the analysis demonstrates that such commitments can be established with purely military means. This casts doubt on the popular notion that one can distinguish between regime types by their capability to reveal information credibly. In fact, the conclusion clearly points to an alternative that in no way depends on regime type and as such undermines the logic of democratic peace theories that rely on credible signaling.

Second, the model shows that some of the general monotonicity results from Banks (1990) will not extend to an environment where the probability of victory is endogenous to state crisis decisions.[3] Banks finds that the probability of war is increasing in the expected benefits from war of the informed actor. If military mobilization did not influence the probability of winning, then his results would extend to this model as well: actors that value the issue more would have higher expected utilities from war. However, mobilization decisions do influence the probability of winning, and through it, the expected utility of war. Therefore, actors that value the issue more may or may not have higher expected utilities from war, depending on their relative preparedness to wage it, the level of which they choose while bargaining.

I show that the equilibrium probability of war can be non-monotonic in the valuation of the informed player: low-valuation types do not mobilize (probability of war is zero), middle-range valuation types mobilize optimally and attack with certainty (probability one), and high valuation types mobilize sufficient forces to induce the opponent to quit (again, probability zero). Studies generally define a strong state as one with a high expected utility of war. This analysis questions whether thinking about rivals in terms of their value for war is even meaningful given that they can, at least in part, determine that value through their crisis decisions.

Third, the model may shed light on an important puzzle in the causes of war literature. It is generally accepted now that there are two main rationalist explanations for war (Fearon 1995). The first relies on asymmetric information, and the second on commitment problems. I will argue that as they stand, these explanations are incomplete and unsatisfying. In particular, the breakdown of bargaining under incomplete information has trouble

[2] See Smith (1998) on the microfoundations of the audience cost mechanism, and Schultz (2001*b*) for another critique of its shortcomings. Because of the theoretical problems with identifying the mechanism that generates the audience costs themselves, scholars have begun to emphasize the public nature of disputes, preferring to focus on pure diplomatic communication instead of military actions (Schultz 1998, Sartori 2002, Ramsay 2004). Although these studies are valuable, they neglect what seems to be the essence of a crisis: it is a dispute that occurs in the shadow of power.

[3] Banks's (1990) study is very important because it establishes results that must be shared by all models in which one-sided private information about benefits and costs of war is present regardless of their specific game-theoretic structure. These generic results turn out to need the additional assumption that while the expected payoff from war is a function of these privately known variables, it cannot be manipulated by the actors directly, the very assumption this article questions.

accounting for persistent fighting. The model shows a different logic operating in a two-step fashion: at the outset, uncertainty may cause actors to tie their hands successfully by overcommitting military resources. However, this entails a risk of painting oneself into a corner against an opponent prepared to fight while simultaneously failing to commit enough to compel him to back down. As the crisis evolves, the two opponents can find themselves with formidable military mobilizations that are just enough to render them willing to fight but not quite enough to induce the opponent to capitulate. In this situation, war becomes the optimal choice for both, and states fight with complete information. In other words, the model points to a dynamic that explains war as the rational choice under complete information given the crisis situation actors create themselves because of asymmetric information. In this, the results substantially confirm Count Witte's assertion cited above: when mobilization fails as a deterrent, war occurs only "for the gravest of reasons," not by mistake. By the time fighting begins, informational issues that have played a role during the crisis become essentially irrelevant.

In what follows, I first review the relevant literature on coercive behavior in crises, and elaborate on the differences between signaling mechanisms. Nest, I present the model and the analysis of equilibrium behavior. I then discuss the comparative statics findings and relate them to existing crisis bargaining models. An explanation of the Chinese intervention in the Korean War and the American response to it illustrates the logic developed in this article and simultaneously challenges several alternative explanations. I then offer some general conclusions and suggestions for future research.

2 Coercion in Interstate Crises

Perhaps the main problem that leaders face in a crisis is credibility: How does a leader persuade an opponent that his threat to use force is genuine? That he would, in fact, follow up on it should the opponent fail to comply with his demands? The decision to carry out the threat depends on the leader's resolve, his valuation of the issue, among many other things, all of which may be unobservable to the other. The leader has to communicate enough information to convince her that he is serious. If the opponent believes the message and wants to avoid war, she would be forced to make concessions. However, if there were some statement that would accomplish this, then all leaders—resolved and unresolved alike—would make it, and hence the opponent would have no reason to believe it. The problem then is to find a statement that only resolved leaders would be willing to make.

Jervis (1970) studies *signals*, which do not change the distribution of power, and *indices*, which are either impossible for the actor to manipulate (and so are inherently credible) or are too costly for an actor to be willing to manipulate. In modern terms, he distinguishes between "cheap talk" and "costly signaling," although his emphasis on psychological factors that influence credibility blurs the fundamental differences between the two.[4]

[4] Another interpretation of the two categories would reduce the distinction to whether the characteristic is at all manipulable or not. This is what Spence (1973) does in his own seminal article, giving a worker's educational choice as an example of a signal, and the worker's sex as an example of an index. However, it seems to me that Jervis is quite explicit in that indices *can* be manipulated, but that actors may not be *willing* to do it. This distinction is important because the costly signaling based on Spence's model that I discuss shortly would actually fall in the "index" category, just like the worker's education level would provided that it

It is well-known that the possibilities for credible revelation of information when talk is cheap are rather limited and depend crucially on the degree of antagonism between the actors (Crawford and Sobel 1982).[5] Following Schelling (1960), most studies have explored tacit communication through actions instead of words. Schelling (1966) focused on two major strategic moves for making commitments, in particular threats to use force, credible: constraining one's future choices and manipulating risk.

Although it may not be immediately obvious, these tactics rely on a common mechanism: They are actions that reveal willingness to run a higher risk of war if the opponent does not comply with one's demands. In the first tactic, one eliminates possibilities for not going through with the threat, which increases the risk of refusing to comply with it. The risk of war depends on the ease with which one could escape the leap into fighting. In the second, simply continuing the crisis generates an escalating risk of disaster. In general, willingness to run higher risks of war results in better expected bargains in crises (Banks 1990).[6]

One can think of such tactics in terms of expected benefits from war and expected costs of avoiding it: anything that increases either one relative to the other would in effect commit an actor by *tying his hands* at the final stage. Fearon (1994) noted that domestic political audiences can generate costs for leaders who escalate a crisis and then capitulate, creating an environment in which a leader could tie his hands, and thus signal resolve to foreign adversaries. Even though leaders pay the costs only if they back down, their willingness to risk escalation to a point where each of them would be irrevocably committed to not backing down can reveal their resolve.

This contrasts with another signaling mechanism that relies on *sinking costs*, that is incurring expenses that do not directly affect the expected payoffs from war and capitulation.[7] Only actors who value the issue sufficiently would be willing to pay these costs, turning them into a credible revelation of resolve by separating from low-resolve actors through their action. When the last clear chance to avoid war comes, these costs are sunk and cannot affect the decision to attack, hence they cannot work as a commitment device and their function is purely informational.

What is the role of military actions, such as mobilization, in a crisis? Fearon (1994, p. 579) notes that the "informal literature on international conflict and the causes of war takes it as unproblematic that actions such as mobilization 'demonstrate resolve'," and argues that 'if mobilization is to convey information and allow learning, it must carry with it some cost or disincentive that affects low-resolve more than high-resolve states." He then goes on to dismiss the financial costs of mobilization as being insufficient to generate enough disincentive to engage in it, and concludes that we should focus on an alternative

is sufficiently costly for low-productivity types to acquire. The labels can be confusing, so I will stick with the modern terminology. We must keep the distinction within the rationalist framework clear because it has rather drastic consequences for information transmission, as I discuss next.

[5] Reputational concerns due to continuing interaction with domestic (Guisinger and Smith 2002) or foreign (Sartori 2002) audiences may lend credibility to cheap talk. Ramsay (2004) shows that cheap talk signaling can, but may not, occur when there are multiple audiences even in the absence of ongoing relationships. When both cheap talk and costly messages are available, costly signals can improve the precision of communication (Austen-Smith and Banks 2000).

[6] This does not necessarily mean that the actor willing to run the highest risks would get the best bargain (Powell 1990).

[7] This is the costly signaling mechanism that comes from the economics tradition (Spence 1973).

mechanism—domestic political costs—that has a tying hands effect.

While one may quibble with the notion that mobilization is not costly enough,[8] the more important omission is that the argument treats mobilization (and similar militarized crisis activities) as costly actions that are unrelated to the actual use of force. However, one can hardly wage war without preparing for it, and the primary role of mobilization is not to incur costs (thereby signaling resolve) but rather to prepare for fighting by increasing the chances of victory. But improving one's prospects in fighting increases the value of war relative to peace, and can therefore have a tying hands effect. In fact, it is difficult to conceive of pure sunk costs in this context. Perhaps military exercises away from the potential war zone could qualify as such, but almost anything countries can do in terms of improving defenses or enhancing offensive capability affects the expected payoff from fighting quite apart from the costs incurred in doing it.[9]

It is worth noting that it is precisely the underestimation of mobilization's role as a commitment device beyond its immediate costliness that leads one influential study to conclude that "the financial costs of mobilization rarely seem the principal concern of leaders in a crisis" (Fearon 1994, p. 580), implying that these costs are insufficient to generate credible revelation of resolve. As I will show, this is true only if mobilization functions only as a sunk cost: if it is cheap, then almost anyone could do it.[10] However, when we consider its tying hands function, mobilization does acquire crisis bargaining significance, as the following analysis demonstrates. It affects not only signaling behavior of the potential revisionist, but also the defensive posture of the status quo power.

Empirically then, it seems that military actions states take during a crisis—mobilizing troops, dispatching forces—entail costs that are paid regardless of the outcome, and in this sense are sunk; however, they also improve one's expected value of war relative to peace, and in this sense they can tie one's hands. While *militarized coercion* involves actions with these characteristics, existing theories of interstate crisis bargaining have not analyzed their consequences properly.

[8] After all, putting the armed forces on war footing can be exceedingly costly because it involves diverting people from their peacetime jobs, transporting them, clothing them, and feeding them, usually at concentration places that are convenient for fighting but hardly for anything else.

[9] Fearon (1997, fn. 27) actually does recognize this and notes that "insofar as sunk-cost signals are most naturally interpreted as money spent building arms, mobilizing troops, and/or stationing them abroad,... the probability of winning a conflict... should increase with the size of the signal."

[10] Robert McNamara famously claimed that his policy that privileged conventional forces did not undercut the credibility of the nuclear deterrent because "we have spent $2 billion to strengthen our nuclear deterrent.... It is absurd to think that we would have unbalanced the budget simply to strengthen a weapon that we had decided never to use" (Quoted in Jervis 1970, p. 92). Jervis notes that if these improvements "put the state in a better position to carry out its policy," then they could signal resolve. However, he dismisses such a role because (a) such measures cannot affect the balance of power quickly enough, (b) the costs are sunk, and (c) they are too small in relative terms anyway. It is correct that insofar as these costs are sunk, they do not affect incentives to follow through on threats, and so cannot be improving the credibility. But this does not mean they cannot reveal resolve: the spending *would* signal something if it was high relative to U.S. wealth; the problem is that some countries may be too rich to signal resolve through pure sunk costs. The dismissal of the military value of this spending underestimates the tying hands effect during a crisis. After all, one can hardly argue that preparing to fight does not affect one's chances of success. The one study that analyzes the impact of mobilization on crisis bargaining is Rector (2003). However, it, too, ignores the tying hands effect and treats mobilization as partial prepayment of war costs. As such, mobilization can play only a sunk cost role. Not surprisingly, the study concludes that its signaling effect is nearly non-existent.

In the formal literature, the issue has been completely side-stepped in favor of models that incorporate only one of the two functions: The probability of winning is exogenously fixed instead of being determined endogenously by the decisions of the actors.[11] This class of models is nearly exhaustive: very few admit endogenous probability of victory. I am aware of three exceptions. Brito and Intriligator (1985) study resource redistribution as alternative to war under incomplete information, but analyze Nash equilibria that may not be sequential (so threats may not be credible) and assume military allocations are made simultaneously (and so one cannot react to the mobilization of the other). Powell (1993) studies the guns versus butter trade-off but because he analyzes the complete information case, we cannot use the results to study signaling issues. The most closely related approach is that of Morrow (1994), who models the effect of an alliance as having a dual role: increasing the expected value of war, and decreasing the value of the status quo. However, in that model actors are unable to choose the level of commitment, which seems to be an important feature of crises because of its potential signaling role.[12]

In other words, nearly all existing models cannot seriously investigate the impact of military moves in crisis situations because they ignore the tying hands effect they may have. This is a crucial shortcoming because in these models, the probability of winning determines the expected payoff from war, which in turn determines the credibility of threats, and hence, the actor's ability to obtain better bargains. As Banks (1990) demonstrates, the higher the informed actor's expected payoff from war, the higher his payoff from settling the dispute peacefully, and the higher the probability of war in equilibrium. All crisis bargaining models that treat the probability of winning as exogenous would produce this dynamic. However, as I argued, this crucial variable that essentially generates optimal behavior in crisis bargaining models should be part of the process that depends on it. If deliberate actions influence its value, which in turn affects the informational content of these actions, how are we to interpret mobilization decisions? To what extent are costly military actions useful in communicating in crisis: do they make crises more or less stable? What levels of military mobilizations should we expect and what is the price of peace in terms of maintenance of military establishment by defenders?

To answer such questions, the model must have the following features: (a) both actors should be able to choose the level of military mobilization as means of tacit communication; (b) an actor's mobilization should be costly but should increase its probability of winning if war breaks out; (c) mobilization may not necessarily increase the expected utility from war (even though it makes victory more likely, a positive impact, its cost enters negatively); (d) at least one of the actors should be uncertain about the valuation of the other; and (e) actors should be able to make their deliberate attack decisions in light of the information provided by the mobilization levels. Consequently, the model I construct in the next section incorporates all of these.

[11] This also holds for models where the power distribution changes independently of the choices of the actors, as in Powell (1996) and Slantchev (2003*b*).

[12] Although the economic analysis of contests is closely related to the optimal resource allocation issue (Hirshleifer 1988), the contest models do not allow actors to make their war initiation decisions in light of the new information furnished by the mobilization levels, an important feature of sequential crisis bargaining (Morrow 1989).

3 The Model

Two players, S_1 and S_2, face a potential dispute over territory valued at $v_1 \in (0, 1)$ by the status quo power S_1, who is currently in possession of it. While this valuation is common knowledge, the potential revisionist S_2's valuation is private information.[13] S_1 believes that v_2 is distributed on the interval $[0, 1]$ according to the cumulative distribution function F with continuous strictly positive density f, and this belief is common knowledge.

Initially, S_1 decides on his military allocation level, $m_1 \geq 0$. Choosing $m_1 = 0$ is equivalent to relinquishing the claim to the territory, and ending the game with payoffs $(0, v_2)$. Otherwise, the amount $m_1 > 0$ is invested in possible defense. After observing his choice, S_2 either decides to live with the status quo or makes a demand for the territory by starting a crisis. S_2 can escalate by choosing a level of mobilization, $m_2 > 0$, or can opt for the status quo with $m_2 = 0$, ending the game with the payoffs $(v_1 - m_1, 0)$. The costs of mobilization are sunk and incurred immediately. However, if war erupts, the level of mobilization increases the probability of victory. After observing S_2's level of mobilization, S_1 can capitulate, ending the game with payoffs $(-m_1, v_2 - m_2)$; preemptively attack, ending the game with war; or resist, relinquishing the final choice to S_2. If he resists, S_2 decides whether to capitulate, ending the game with payoffs $(v_1 - m_1, -m_2)$, or attack, ending the game with war.

If war occurs, each player suffers the cost of fighting, $c_i \in (0, 1)$. Victory in war is determined by the amount of resources mobilized by the players and the military technology. Defeat means the opponent obtains the territory. The probability that player i prevails is:

$$p_i(m_1, m_2) = \frac{\lambda m_i}{\lambda m_i + m_{-i}},$$

where $\lambda > 0$ measures the offense-defense balance.[14] If $\lambda = 1$, then there are no advantages to striking first. If $\lambda > 1$, then the offense dominates and for any given allocation (m_1, m_2), the probability of prevailing by striking first is strictly larger than the probability of prevailing if attacked. Conversely, if $\lambda < 1$, then the defense dominates, and for any given allocation it is better to wait for an attack instead of striking first. If i attacks first, the

[13] Since S_1 has the territory, it is natural to assume that his valuation is known to everyone. It is the potential revisionist's valuation that is the source of uncertainty about how far she would be willing to go to acquire it. The labels "status quo power" and "potential revisionist" identify which actor would be in possession of the territory if a crisis does not occur. This has nothing to do with the degree of satisfaction with the status quo that determines these labels in classical realism. For ease of exposition, I refer to S_1 as a "he" and S_2 as a "she." In a departure from prevalent models of conflict, the probability of winning and the costs of war to both sides are common knowledge. I do not argue that uncertainty over these variables is not important. Rather, I point to a potentially fruitful avenue of explaining conflict when hinging the explanation on uncertainty about power or costs stretches credulity (e.g. Japan attacking the U.S. in 1941, Iraq resisting the U.S. in 2002, or any other severely asymmetric conflict). This approach is similar to Fearon (1997) and Sartori (2002).

[14] The ratio form of the contest success function is undefined at $m_1 = m_2 = 0$. Most applications usually define it to equal $1/2$ in this case, introducing a discontinuity. However, since the game ends with $m_1 = 0$, how we define it is immaterial. In fact, we can leave it undefined. Another approach would be to follow Powell (1993) and assume that a conflict of interest exists; that is, if one actor disarms, then the other strictly prefers to attack than to disarm as well.

expected payoff from war is:

$$W_i^a(m_1, m_2) = p_i v_i - c_i - m_i = \frac{\lambda m_i v_i}{\lambda m_i + m_{-i}} - c_i - m_i,$$

and, if i is attacked, it is

$$W_i^d(m_1, m_2) = (1 - p_{-i})v_i - c_i - m_i = \frac{m_i v_i}{m_i + \lambda m_{-i}} - c_i - m_i.$$

It is easy to show that $\lambda < 1 \Leftrightarrow W_i^d > W_i^a$. If defense dominates, then the expected value of war is higher when one is attacked than when one attacks first.[15] For the rest of this paper, assume $\lambda < 1$. The central claims do not change when $\lambda > 1$, but the statement of the results is quite a bit more involved.

By subgame perfection, S_2 would attack at her final decision node if, and only if, her expected payoff from war is at least as good as capitulating: $W_2^a(m_1, m_2) \geq -m_2$, or:

$$v_2 \geq c_2 + \frac{c_2 m_1}{\lambda m_2} \equiv \gamma(m_1, m_2) > 0, \tag{1}$$

where $\gamma(m_1, m_2)$ is the highest type that would capitulate if resisted at the allocation level (m_1, m_2). That is, all types $v_2 < \gamma(m_1, m_2)$ would capitulate, and all types $v_2 \geq \gamma(m_1, m_2)$ would attack when resisted. Note that $\gamma(m_1, m_2) > 0$ implies that the lowest-valuation types never attack. In particular, types $v_2 \leq c_2$ will never attack even if they are sure to win. For any posterior belief characterized by the distribution function $G(\gamma(m_1, m_2))$ that S_1 may hold, resisting at the allocation level (m_1, m_2) yields S_1 the expected payoff:

$$\begin{aligned} EU_1(m_1, m_2) &= G(\gamma)(v_1 - m_1) + (1 - G(\gamma))W_1^d(m_1, m_2) \\ &= G(\gamma(m_1, m_2))v_1 + \Big[1 - G(\gamma(m_1, m_2))\Big]\left[\frac{m_1 v_1}{m_1 + \lambda m_2} - c_1\right] - m_1. \end{aligned} \tag{2}$$

If S_1 attacks preemptively, he would get $W_1^a(m_1, m_2)$. Since $W_1^d(m_1, m_2) < v_1 - m_1$, it follows that $\lambda < 1 \Rightarrow W_1^a(m_1, m_2) < W_1^d(m_1, m_2)$ implies that $W_1^a(m_1, m_2) < EU_1(m_1, m_2)$ regardless of S_1's posterior belief. In other words, if defense dominates, then in equilibrium S_1 will never preempt: He will either capitulate or resist. If the offense dominates ($\lambda > 1$), then S_1 may or may not prefer to wait, it will depend on the probability with which S_2 is expected to give up without a fight.

[15] This offense-defense balance depends on military technology, and is somewhat different from the ease of conquest concept that goes under the same name in offense-defense theory (Quester 1977, Jervis 1978). According to that theory, "offense-defense balance" refers to whether it is easier to take a territory than to defend it. Since the territory belongs to S_1 in this model, an offensive advantage simply means that S_2 could acquire it more easily given the same distribution of power than S_1 could defend it. A defensive advantage means that S_1 would find it easier to defend it than S_2 to acquire it at the same distribution of power. The specification of the contest success function above measures whether it is easier to attack than to defend regardless of who possesses the territory, which is perhaps more in keeping with the way the notion is used by military historians. If $\lambda < 1$, then the defender has the advantage (think castles prior to the invention of cannon or trench warfare prior to the invention of tanks), and if $\lambda > 1$, then the reverse is true. For further discussion of the traditional concept in international relations theory, see Glaser and Kaufmann (1998).

The solution concept is perfect Bayesian equilibrium (or simply "equilibrium"), which requires that strategies are sequentially rational given the beliefs, and that beliefs are consistent with the strategies, and derived from Bayes rule whenever possible (Fudenberg and Tirole 1991).

The model incorporates the empirically motivated features I identified in the previous section. It also differs from many existing formulations in that it treats the opponent's valuation of the disputed object as the source of uncertainty. This makes it especially well suited to address situations where costs of war and probability of winning given any levels of military mobilizations can be determined, as is the case in many asymmetric conflicts.

The model is complicated by the continuum of types and actions, so it trades an ultimatum "bargaining" protocol for rich mobilization possibilities in letting both actors to choose the level of "forceful persuasion." I also use a common functional form for the contest success function. This gives the advantage of yielding analytically tractable solutions but the analysis can be extended to the general case. I restrict attention to one-sided asymmetric information on the observation that the value of the disputed object to the actor who owns it can be more readily ascertained, and many historical cases seem to involve uncertainty over the potential revisionist's valuation.

4 The Mobilization of the Revisionist State

It will be helpful to analyze the signaling game beginning with S_2's allocation decision given some allocation $m_1 > 0$. In any equilibrium, the strategies would have to form an equilibrium in this continuation game, and since S_1 is uninformed, his initial decision reduces to choosing (through his allocation) the equilibrium that yields the highest expected payoff.

As we have seen, when defense dominates offense, S_1 never preempts in equilibrium regardless of his posterior beliefs. Hence, his choice reduces to capitulation or resistance. Suppose that S_1 would capitulate for sure if he observed an allocation $\overline{m}_2(m_1)$. I shall refer to this as the **assured compellence level**. There can be at most one such level in equilibrium. To see that, suppose that there were more than one. In this case, the S_2 types who allocate the higher level could profitably deviate to switching to the lower one.

Obviously, $\overline{m}_2(m_1)$ is an upper bound on any equilibrium allocation by S_2. Further, note that S_2 would never mobilize $m_2 \geq 1$ in any equilibrium. This is because the best possible payoff she can ever hope to obtain is $v_2 - m_2$ if S_1 capitulates, and this is non-positive for any $m_2 \geq 1$, for all $v_2 \leq 1$, which implies that no type would ever be willing to allocate such an amount. This now means that $\overline{m}_2(m_1) < 1$ in equilibrium as well. I now state a series of lemmata that would help characterize equilibrium behavior.

LEMMA 1. *If some type of S_2 allocates $m_2 > 0$ in equilibrium, then it cannot be the case that all types capitulate when resisted.*

Proof. Suppose that in some equilibrium all types with positive allocations capitulate if resisted. Then S_1 would always resist. But in this case all these types would do strictly better by quitting immediately instead of capitulating later and getting $-m_2 < 0$. □

This lemma means that in any equilibrium in which S_2 mobilizes, some (possibly all) of the mobilizing types must be genuine challengers.

Let $\beta(m_1)$ denote the type that is indifferent between optimal war and assured compellence; that is $W_2^a(m_1, m_2^*(m_1, \beta(m_1))) = \beta(m_1) - \overline{m}_2(m_1)$, where:

$$m_2^*(m_1, v_2) = \sqrt{\frac{m_1 v_2}{\lambda}} - \frac{m_1}{\lambda} \geq 0 \tag{3}$$

is the optimal allocation by type v_2 if she expects to fight for sure some m_1. That is, $m_2^*(m_1, v_2)$ maximizes $W_2^a(m_1, m_2(v_2))$ subject to the constraint that $m_2^* \geq 0$. Substituting and solving for $\beta(m_1)$ yields:

$$\beta(m_1) = \frac{\left(m_1 + \lambda\left[\overline{m}_2(m_1) - c_2\right]\right)^2}{4\lambda m_1}. \tag{4}$$

The following Lemma 2 implies that all $v_2 < \beta(m_1)$ prefer war to assured compellence, and all $v_2 \geq \beta(m_1)$ prefer assured compellence to war.

LEMMA 2. *If $\beta(m_1) < 1$, then all $v_2 > \beta(m_1)$ strictly prefer assured compellence.*

Proof. It suffices to show that the maximum expected payoff from fighting is increasing in S_2's type at a slower rate than the payoff from assured compellence:

$$\frac{\partial W_2^a(m_1, m_2^*(m_1, v_2))}{\partial v_2} = 1 - \sqrt{\frac{m_1}{\lambda v_2}} < 1 = \frac{\partial[v_2 - \overline{m}_2(m_1)]}{\partial v_2}.$$

Since $\beta(m_1) - \overline{m}_2(m_1) = W_2^a(m_1, m_2^*(\beta(m_1)))$, these derivatives imply that $v_2 - \overline{m}_2(m_1) > W_2^a(m_1, m_2^*(m_1, v_2))$ for all $v_2 > \beta(m_1)$. □

It will be useful to define two other special types of S_2. Let $\alpha(m_1)$ denote the type that is indifferent between capitulation and assured compellence at $\overline{m}_2(m_1)$; that is, $\alpha(m_1) - \overline{m}_2(m_1) = 0$. Since the payoff from assured compellence strictly increases in type, all $v_2 < \alpha(m_1)$ prefer capitulation to assured compellence, and all $v_2 \geq \alpha(m_1)$ prefer assured compellence to capitulation.

Let $\delta(m_1)$ denote the type that is indifferent between capitulation and optimal war. That is $W_2^a(m_1, m_2^*(m_1, \delta(m_1))) = 0$, or:

$$\delta(m_1) = c_2 + 2\sqrt{\frac{c_2 m_1}{\lambda}} + \frac{m_1}{\lambda}, \tag{5}$$

where we used the maximizer from (3). Since the payoff from optimal war is strictly increasing in type, all $v_2 < \delta(m_1)$ prefer capitulation to optimal war, and all $v_2 \geq \delta(m_1)$ prefer optimal war to capitulation.

I now establish the possible configurations of these cut-points. With slight abuse of notation, suppress their explicit dependence on m_1.

LEMMA 3. *If $\delta \geq \alpha$, then all $v_2 < \alpha$ capitulate and all $v_2 \geq \alpha$ mobilize at the compellence level $\overline{m}_2(m_1)$ in equilibrium, provided $\overline{m}_2(m_1)$ is feasible.*

Proof. Suppose $\delta \geq \alpha$. The payoff from assured compellence equals zero for type α while the payoff from optimal war equals zero for type δ. Since the expected payoff from assured compellence is strictly increasing in type, $\delta > \alpha$ must strictly prefer compellence to war. By Lemma 2, it follows that all types $v_2 \geq \alpha$ strictly prefer assured compellence to both optimal war and capitulation. Hence, if $\alpha \leq \delta$, then all $v_2 < \alpha$ capitulate in equilibrium, and all $v_2 \geq \alpha$ mobilize at the compellence level. □

Lemma 3 shows that when $\delta \geq \alpha$, optimal behavior can take only one form if $\overline{m}_2(m_1)$ is feasible.[16] Hence, we need not worry about the location of β. The following lemma establishes that only one configuration remains for the other case.

LEMMA 4. *If $\delta < \alpha$, then $\alpha < \beta$.*

Proof. Suppose $\delta < \alpha$. There are three possibilities, depending on where β is located. Suppose $\delta < \beta < \alpha$. This implies that all types $v_2 \geq \beta > \delta$ prefer compellence to optimal war, and war to capitulation, which implies they must prefer compellence to capitulation. But $v_2 < \alpha$ implies that capitulation is preferred to compellence, a contradiction for all types $v_2 \in [\beta, \alpha]$. Suppose $\beta < \delta < \alpha$. This implies that all types $v_2 \geq \delta > \beta$ prefer compellence to war and war to capitulation, and so they must prefer compellence to capitulation. However, all types $v_2 \in [\delta, \alpha]$ prefer capitulation to compellence, a contradiction. Suppose $\delta < \alpha < \beta$. This is the only possibility that is consistent with the preferences signified by these cut-points. All $v_2 < \delta$ prefer capitulation to both compellence and war, all $v_2 \in [\delta, \beta]$ prefer war to both compellence and capitulation, and all $v_2 > \beta$ prefer compellence to both war and capitulation. In other words, $\alpha < \beta$. □

Lemma 3 and Lemma 4 imply that we should look for solutions to the only two possible configurations of the cut-points: $\alpha \leq \delta$, and $\delta < \alpha < \beta$. This leads to five cases, depending on the relationship between the various cut-points and unity. I now characterize equilibrium behavior for each case.

4.1 Assured Compellence

Suppose $\delta \geq \alpha$ and $\alpha < 1$. By Lemma 3, S_2's optimal strategy must take the following form: all $v_2 < \alpha$ capitulate immediately, all $v_2 \geq \alpha$ mobilize at the compellence level $\overline{m}_2$. By definition, $\alpha - \overline{m}_2 = 0$, and therefore:

$$\alpha = \overline{m}_2, \tag{6}$$

If $\overline{m}_2 < 1$, then the assured compellence level is feasible because (6) implies that there exists a type of S_2 that could choose to allocate $\overline{m}_2$ optimally, and so S_1 is *potentially compellable*. Otherwise, he is *uncompellable*. Note that $\alpha < 1$ implies that S_1 is potentially compellable in this case.

[16] Technically, any $m_2 > 0$ is feasible because there is no budget constraint. However, since S_2 would never spend more than her highest possible valuation in equilibrium, this valuation functions as an effective constraint. The results remain unchanged if we allow for an arbitrary upper bound on valuations except we would have to restate the theorems in terms of that bound.

Subgame perfection and (1) imply that if $\alpha \leq \gamma(m_1, \overline{m}_2)$, all types $v_2 < \gamma(m_1, \overline{m}_2)$ capitulate if resisted (bluffers), and all $v_2 \geq \gamma(m_1, \overline{m}_2)$ fight if resisted (genuine challengers). If $\alpha > \gamma(m_1, \overline{m}_2)$, only genuine challengers mobilize in equilibrium. Given S_1's prior belief $F(\cdot)$, his posterior belief that S_2 would capitulate when resisted conditional on $\overline{m}_2$ is:

$$G(\gamma(m_1, \overline{m}_2)) = \begin{cases} \frac{F(\gamma(m_1,\overline{m}_2))-F(\overline{m}_2)}{F(1)-F(\overline{m}_2)} & \text{if } \overline{m}_2 \leq \gamma(m_1, \overline{m}_2) \\ 0 & \text{otherwise.} \end{cases}$$

S_1's strategy is to resist any allocation $m_2 < \overline{m}_2$ and capitulate otherwise. S_1 would capitulate in equilibrium if doing so is at least as good as resisting, or whenever $-m_1 \geq EU_1(m_1, m_2)$, where we use the expression from (2). Since $\gamma(m_1, m_2)$ is strictly decreasing in m_2, it follows that the set of types that would attack if challenged increases in m_2, and so the probability of keeping the territory without war decreases. Further, S_1's expected payoff from war decreases in m_2, and therefore overall $EU_1(m_1, m_2)$ is strictly decreasing in m_2. On the other hand, S_2's payoff from S_1 capitulating is strictly decreasing in m_2. It follows then, that in equilibrium S_2 must be selecting the smallest allocation that would cause S_1 to quit. In other words, $\overline{m}_2$ must solve $EU_1(m_1, \overline{m}_2) = -m_1$. Hence, $\overline{m}_2$ solves:

$$G(\gamma(m_1, \overline{m}_2))v_1 + \left[1 - G(\gamma(m_1, \overline{m}_2))\right]\left[\frac{m_1 v_1}{m_1 + \lambda \overline{m}_2} - c_1\right] = 0. \tag{7}$$

CLAIM 1. *Equation 7 has a unique solution.*

Proof. Let

$$\hat{m}_2 \equiv \frac{1}{2}\left[c_2 + \sqrt{c_2\left(c_2 + \frac{4m_1}{\lambda}\right)}\right], \tag{8}$$

and note that $m_2 \leq \hat{m}_2 \Leftrightarrow m_2 \leq \gamma(m_1, m_2)$. This, in turn implies that for all $m_2 \geq \hat{m}_2$, $G(\gamma(m_1, m_2)) = 0$. Note now that (7) is strictly decreasing in $\overline{m}_2$, and that for all $\overline{m}_2 \geq \hat{m}_2$, it reduces to $m_1 v_1/(m_1 + \lambda \overline{m}_2) - c_1$, which itself converges to $-c_1 < 0$ in the limit as $\overline{m}_2 \to \infty$. In other words, for high enough $\overline{m}_2$, the expression is strictly negative. Because it is also continuous in $\overline{m}_2 > 0$, it follows that (7) has a unique solution.[17] □

Let $\alpha = \overline{m}_2$ be the unique solution to (7), let γ be defined in (1), and let δ be defined in (5). The following proposition summarizes the equilibrium.

PROPOSITION 1. *If, and only if, $\alpha < \delta$, and $\alpha < 1$, the following strategies constitute the **assured compellence** equilibrium of the signaling game: All $v_2 < \alpha$ capitulate, and all $v_2 \geq \alpha$ allocate $\overline{m}_2$; if resisted, all $v_2 < \gamma$ capitulate, and all $v_2 \geq \gamma$ attack. S_1 resists after any $m_2 < \overline{m}_2$, and capitulates after any $m_2 \geq \overline{m}_2$.*

[17] The solution may not be feasible if $\overline{m}_2 \geq 1$, because there exists no type $\alpha = \overline{m}_2$. I have already noted that $\overline{m}_2 < 1$ in any equilibrium where it is allocated. The case where it won't be allocated is in a later section. If F is the uniform distribution, (7) defines a cubic, which can be solved analytically with *Mathematica*. However, the resulting expression is still very cumbersome.

Proof. The on and off-the-path beliefs can be specified as follows: if any $m_2 < \overline{m}_2$ is observed, update to believe that v_2 is distributed by F on $[0, \overline{m}_2]$, and if any $m_2 \geq \overline{m}_2$ is observed, update to believe that v_2 is distributed by F on $[\overline{m}_2, 1]$. With these beliefs, if some type $v_2 < \alpha$ deviates and allocates $0 < m_2 < \overline{m}_2$, then S_1 responds by resisting. Since $\delta \geq \alpha$, war is worse than capitulation for this type, so she would capitulate and get $-m_2 < 0$, so such a deviation is not profitable. Allocating $m_2 \geq \overline{m}_2$ and ensuring capitulation by S_1 is not profitable for this type by construction. Suppose that some type $v_2 \geq \alpha$ deviated to $m_2 < \overline{m}_2$, to which S_1 responds by resisting. Since $\delta \geq \alpha$, Lemma 3 implies that such war would be worse than assured compellence. Finally, by the argument in the text, deviation to $m_2 > \overline{m}_2$ cannot be profitable for any type. □

There is no risk of war in this equilibrium because whenever a positive mobilization occurs, then the crisis is resolved with S_1's capitulation. Although there may be some bluffers in addition to the always-present genuine challengers, their bluff is never called. As a short-hand, I shall refer to the assured compellence equilibrium as the **type I equilibrium**. S_1 must be potentially compellable for this equilibrium to exist. It can be shown that for very low initial allocations m_1, it always does. In other words, if S_1 allocates too little to defense, he can expect that S_2 will challenge him with strictly positive probability and that this challenge would compel his capitulation. As we shall see, this does not necessarily mean that S_1 would immediately give up the territory in equilibrium: as long as the probability of the challenge is not too high, S_1 would still be better off spending some on defense and taking his chances that S_2's valuation would prove not tempting enough for her.

This equilibrium involves bluffing whenever $\overline{m}_2 < \hat{m}_2$ from (8), and cannot be eliminated with an appeal to any of the refinements like the intuitive criterion (Cho and Kreps 1987), universal divinity (Banks and Sobel 1987), or perfect sequentiality (Grossman and Perry 1986). This contrasts with the strong no-bluffing results in Fearon (1994), as I discuss later.

4.2 Feasible Compellence

The next case to examine is $\delta < \alpha$. By Lemma 4, only one possible configuration exists: $\delta < \alpha < \beta$, where β is defined in (4), and δ is defined in (5).[18] The cut-points suggest that we look for an equilibrium where all $v_2 < \delta$ capitulate, all $v_2 \in [\delta, \beta)$ allocate $m_2^*(m_1, v_2)$ from (3) and attack, and all $v_2 \geq \beta$ allocate $\overline{m}_2$ and attack if resisted. S_1 resists after any $m_2 < \overline{m}_2$, and capitulates after any $m_2 \geq \overline{m}_2$.

Since all $v_2 > \delta$ prefer optimal war to capitulation, all challenges in this equilibrium are genuine, and so $G = 0$, which simplifies (7) and yields an analytic solution to the compellence level:

$$\alpha = \overline{m}_2 = \frac{m_1(v_1 - c_1)}{\lambda c_1}. \tag{9}$$

Note that this is also the solution to (7) for the type I equilibrium when $\overline{m}_2 > \gamma(m_1, \overline{m}_2)$.

[18] Since $\delta < \alpha$ and the payoff from optimal attack increases in type, it follows that for type α herself, war yields a strictly positive payoff, and as such is preferable to assured compellence and capitulation, both of which, by definition, yield zero. Further, since the payoff from assured compellence increases faster in type than the payoff from optimal fighting, it is quite possible for $\beta < 1$ to exist.

Assume that S_1 is potentially compellable, $\overline{m}_2 < 1$, which means:

$$m_1 \quad \begin{cases} < \frac{\lambda c_1}{v_1 - c_1} & \text{if } v_1 > c_1 \\ > 0 & \text{if } v_1 < c_1. \end{cases} \tag{10}$$

Note in particular that if $v_1 < c_1$, then S_1 is always potentially compellable regardless of his initial allocation. Otherwise, he can become uncompellable if he allocates enough.

Using (9) and substituting for $\overline{m}_2$ in (4) yields:

$$\beta = \frac{1}{4\lambda m_1}\left(\lambda c_2 - \frac{m_1 v_1}{c_1}\right)^2. \tag{11}$$

Since $\delta < \alpha$, the requirement $\alpha < 1$ implies that a necessary condition for the existence of this equilibrium is $\delta < 1$:

$$m_1 \leq \lambda(1 - \sqrt{c_2})^2. \tag{12}$$

Finally, $\beta < 1$ yields another necessary condition for the existence of this equilibrium:

$$m_1 \leq \frac{\lambda c_1 c_2}{v_1} + \frac{2\lambda c_1^2}{v_1^2} \cdot \left[1 + \sqrt{1 + \frac{c_2 v_1}{c_1}}\right] \equiv \overline{m}_1, \tag{13}$$

where we use the positive root because $m_1 > 0$. Let α be defined in (9), δ be defined in (5), and β be defined in (11). The following proposition summarizes the result that follows from the discussion above.

PROPOSITION 2. *If, and only if, $\delta \leq \alpha < \beta < 1$, the following strategies constitute the **risk of war** equilibrium of the signaling game: All $v_2 < \delta$ capitulate, all $v_2 \in [\delta, \beta)$ allocate $m_2^*(m_1, v_2)$, and all $v_2 \geq \beta$ allocate $\overline{m}_2$; if resisted, all $v_2 < \gamma$ capitulate, and all $v_2 \geq \gamma$ attack. S_1 resists after any $m_2 < \overline{m}_2$, and capitulates after any $m_2 \geq \overline{m}_2$.*

Proof. On the path beliefs are updated via Bayes rule. In particular, for any allocation $m_2 \in [m_2^*(m_1, \delta), \overline{m}_2)$, S_1 infers S_2's type with certainty. The off-the-path beliefs can be specified as follows: if any $m_2 < m_2^*(m_1, \delta)$ is observed, update to believe that v_2 is distributed by F on $[0, \delta]$, and if any $m_2 \geq \overline{m}_2$ is observed, update to believe that v_2 is distributed by F on $[\beta, 1]$. Verifying that the strategies and these beliefs constitute an equilibrium is straightforward. □

I shall refer to the risk of war equilibrium as a **type II equilibrium**. The ex ante probability of war is $\Pr(\delta \leq v_2 < \beta) = F(\beta) - F(\delta) < 1$. That is, while the risk of war is strictly positive, war is not certain. If S_2 has a high enough valuation, then she would allocate at the assured compellence level and S_1 would capitulate. The most dangerous revisionists are the ones who do not value the issue sufficiently to spend the amount necessary to ensure S_1 would concede peacefully.[19] Even though S_1 is potentially compellable, these types are unwilling to do it, and they go to war choosing their optimal attack allocation. It is worth noting that since they separate fully by their optimal allocation, S_1 infers their type with

[19] Alternatively, we could think of this case as one where the revisionists value the issue a lot but do not have the resources to compel S_1 to capitulate.

certainty and knows that resistance would mean war because all all challenges are genuine. If the revisionist happens to be of such a type, then war occurs with complete information following her mobilization.

If $\delta \leq \alpha < 1 < \beta$, then even though S_1 is potentially compellable, no type is willing to do it. This can happen when condition (13) is not satisfied, in which case war is certain conditional on a challenge. The following proposition summarizes the equilibrium.

PROPOSITION 3. *If, and only if, $\delta \leq \alpha < 1 < \beta$, the following strategies constitute the* ***certain war despite feasible compellence*** *equilibrium of the signaling game: All $v_2 < \delta$ capitulate, and all $v_2 \geq \delta$ allocate $m_2^*(m_1, v_2)$; if resisted, all $v_2 < \gamma$ capitulate, and all $v_2 \geq \gamma$ attack. S_1 resists after any $m_2 < \overline{m}_2$, and capitulates after any $m_2 \geq \overline{m}_2$.*

Proof. On the path beliefs are updated via Bayes rule. For any allocation $m_2 \in [m_2^*(m_1, \delta), m_2^*(m_1, 1)]$, S_1 infers S_2's type with certainty. The off-the-path beliefs can be specified as follows: if any $m_2 < m_2^*(m_1, \delta)$ is observed, update to believe that v_2 is distributed by F on $[0, \delta]$. If any $m_2 > m_2^*(m_1, 1)$, any belief would work. Verifying that the strategies and these beliefs constitute and equilibrium is straightforward. □

I shall refer to this as the **type III equilibrium**. The ex-ante probability of war is $\Pr(v_2 \geq \delta) = 1 - F(\delta)$. The risk of war is strictly positive and war is certain conditional on a mobilization by S_2. There are no bluffers in this equilibrium. Because δ is strictly increasing in m_1, it follows that in this equilibrium, higher allocations by S_1 never increase the risk of war.[20] Unlike the type II case, the most dangerous revisionists here are always the ones with higher valuations because they cannot be deterred from challenging. As in the type II case, even though S_1 is potentially compellable, no type that challenges chooses to do it. S_1 infers the revisionist's type with certainty and war occurs with complete information conditional on a mobilization by S_2.

Consider some m_1 such that the conditions for type II equilibrium are satisfied. What would happen if m_1 increases? Noting that

$$\frac{\partial \beta}{\partial m_1} = \frac{v_1^2 m_1^2 - \lambda c_1^2 c_2^2}{4\lambda c_1^2 m_1^2} \quad \begin{cases} < 0 & \text{if } m_1 < \frac{\lambda c_1 c_2}{v_1} \\ > 0 & \text{otherwise,} \end{cases}$$

we conclude that eventually m_1 will exceed $\lambda c_1 c_2 / v_1$, while still satisfying (13). Continuing the increase beyond this point means that β will strictly increase until it reaches unity, at which point we obtain the type III equilibrium. Because (13) is necessary for type II equilibrium, its converse is sufficient for type III as long as (12) is satisfied. I now examine what happens if m_1 increases further.

4.3 Impossible Compellence

Since $\overline{m}_2$ is strictly increasing in m_1, type III equilibrium will eventually cease to exist for high enough m_1 because $\overline{m}_2(m_1)$ will exceed unity. At this point, S_1 becomes uncompellable and the configuration of cut-points reduces to $\delta < 1 < \alpha$. Since it is impossible to

[20] If F has continuous and strictly positive density, then increasing m_1 strictly decreases the risk of war.

compel S_1 to capitulate, S_2 has to choose between war and capitulation. All $v_2 < \delta$ prefer to capitulate, and all $v_2 \geq \delta$ prefer optimal attack. The following proposition summarizes the equilibrium.

PROPOSITION 4. *If, and only if, $\delta < 1 \leq \alpha$, the following strategies constitute the **certain war with infeasible compellence** equilibrium of the signaling game: All $v_2 < \delta$ capitulate, and all $v_2 \geq \delta$ allocate $m_2^*(m_1, v_2)$; if resisted, all $v_2 < \gamma$ capitulate, and all $v_2 \geq \gamma$ attack. S_1 resists all allocations.*

Proof. On the path beliefs are updated via Bayes rule. For any allocation $m_2 \in [m_2^*(m_1, \delta), m_2^*(m_1, 1)]$, S_1 infers S_2's type with certainty. Any off-the-path beliefs would work. Verifying that the strategies and these beliefs constitute and equilibrium is straightforward. □

I shall refer to this as the **type IV equilibrium**. It looks very much like type III, and from S_1's ex-ante perspective, they are identical. The probability of war is again $1 - F(\delta)$, and war is certain conditional on mobilization by S_2. Higher allocations by S_1 never increase the risk of war in this equilibrium, and the most dangerous types are the high valuation ones. The difference is that compellence is feasible (but not attempted) under path III, while it infeasible (and therefore not attempted either) under path IV. S_1 never expects to capitulate in either of the two equilibria, which are observationally equivalent.

Condition (12) continues to be necessary for type IV equilibrium. However, since (10) is necessary for type III (and II), it follows that its converse is sufficient for type IV provided (12) obtains. Note first that if $v_1 < c_1$, then it is impossible to obtain type IV because S_1 is always potentially compellable. Hence, a necessary condition for this equilibrium is $v_1 > c_1$. In this case, $m_1 \geq \lambda c_1/(v_1 - c_1)$ is sufficient to guarantee $\overline{m}_2 > 1$ as long as m_1 is not too large and (12) still obtains.

Finally, when condition (12) fails, then $\delta \geq 1$, and there are no types that are willing to challenge given that war is certain to occur as long as S_1 is uncompellable. The following proposition states the necessary and sufficient conditions for this equilibrium.

PROPOSITION 5. *If, and only if, $\alpha \geq 1$ and $\delta \geq 1$, the following strategies constitute the **assured deterrence** equilibrium of the signaling game: all v_2 capitulate; if resisted, all $v_2 < \gamma$ capitulate, and all $v_2 \geq \gamma$ attack. S_1 resists all allocations.*

Proof. All information sets are off-the-path but any beliefs that S_1 might hold would sustain this equilibrium. Since $\alpha \geq 1$, no $m_2 \leq 1$ can induce S_1 to quit even if he is sure war would occur. Hence, he would resist all such allocations. If any type deviates to such m_2, war is certain, but $\delta \geq 1$ implies that even optimal war is worse than capitulation for all types. If any type deviates to some $m_2 \geq \overline{m}_2 > 1$, then S_1 would quit for sure but the payoff is strictly negative for all types, and hence such deviation is not optimal. □

I shall refer to this as the **type V equilibrium**. The probability of war is zero and the outcome is capitulation by S_2. To understand the conditions for type V equilibrium, note that when $\alpha > \delta$ (as would be in transitioning from type IV), $\delta \geq 1$ is sufficient for type V. However, it is possible to transition from type I to type V directly. To see this, note that

since $\alpha < 1$ and $\alpha < \delta$ are necessary and sufficient for type I, then $\alpha \geq 1$ is sufficient for type I to fail to exist, and $\alpha < \delta$ further implies $\delta > 1$, and so it is also sufficient for type V to exist as long as $\alpha < \delta$. In other words, the configurations $1 \leq \delta < \alpha$, and $1 \leq \alpha < \delta$ both result in type V.

Condition (10) implies that $v_1 > c_1$ is necessary because otherwise S_1 is always potentially deterrable, and so type V cannot exist. Hence, $v_1 < c_1$ is sufficient to guarantee that type V equilibrium does not exist for any m_1 that S_1 would be willing to choose in equilibrium.

5 The Defense of the Status Quo State

Collectively, the five types exhaust all possible configurations of the cut-points, and therefore provide the solution for the continuation game for any set of the exogenous parameters and any $m_1 > 0$. I now turn to S_1's initial mobilization decision. Since S_1 is the uninformed actor, his choice boils down to selecting which type of equilibrium will occur in the continuation game. It is not possible to derive an analytic solution to this problem because of the non-linearities involved in the optimization at the second stage. Still, because we can generally establish the order in which the continuation game equilibria occur as function of m_1, we can say what type of choices S_1 will face if he increases his mobilization level. With the help of computer simulations, we can derive precise predictions for interesting ranges of the exogenous variables too.

As noted before, type I equilibrium always exists regardless of the values of the exogenous parameters because for m_1 small enough, the necessary and sufficient conditions from Proposition 1 are satisfied. What happens once m_1 begins to increase? That is, what can S_1 expect if he chooses higher allocations? As the derivations in the previous section suggest, two cases are possible. First, as m_1 increases, the conditions for assured deterrence can be satisfied, and the continuation game has only two possible solutions, both involving peace. Second, as m_1 increases, the existence conditions can satisfy successively equilibrium types II through V.

Informally, the intuition behind the ordering of equilibria in the continuation game is as follows.[21] If S_1 mobilizes very few forces, then he is easy to compel cheaply, and he should expect the assured compellence outcome in the continuation game. There will be many bluffers but because S_1 is relatively weak, he would not dare call their possible bluff and risk facing a genuine revisionist. Increasing m_1 decreases the proportion of bluffers until only genuine revisionists are expected to mobilize. At a price, then, S_1 can eliminate demands by low-valuation challengers. However, he should still expect to capitulate conditional on mobilization by S_2.

Further increases in his mobilization level make S_1 even more difficult to compel, and assured compellence requires ever increasing levels of mobilization by S_2. At some point, the price for ensuring peaceful capitulation by S_1 becomes too high for mid-range types, who instead prefer to allocate optimally and fight. The type II equilibrium obtains with a

[21] The only possible equilibrium mobilization levels in the continuation game cannot exceed S_1's valuation. This means, that it is quite possible that type I is the only equilibrium that S_1 could force. Further, a necessary condition for the existence of type V is $v_1 > c_1$, as noted in the text, and hence $v_1 < c_1$ guarantees that no assured deterrence equilibria are possible.

genuine risk of war: if the opponent happens to value the issue highly, she would mobilize enough to compel S_1 to capitulate (peace), but if she finds this allocation too high, she mobilizes optimally for war, and the two actors fight.[22]

If S_1 increases his mobilization further, the proportion of types willing to respond at the assured compellence level drops to zero, and the type III equilibrium obtains. Even though S_1 is potentially compellable, he has tied his hands too successfully and no type of genuine challenger will bother with peace. Conditional on S_2's mobilization, war is certain. Higher mobilization levels eventually render S_1 uncompellable. This type IV equilibrium is quite similar to the previous one. It involves a perfectly credible equilibrium commitment by S_1 to fight if challenged. However, such commitment comes at the cost of a high risk of war: should S_2 happen to value the issue highly enough, war becomes certain.

Finally, S_1 may increase his mobilization even further, not only tying his hands irrevocably, but also doing so in a way that would deter the potential revisionist from challenging. This is the type V equilibrium, where the probability of war drops to zero again: S_1 has armed himself so much that he is unchallengeable. These dynamics clearly demonstrate that *establishing a credible commitment by tying one's hands can avoid war only if it also makes fighting sufficiently unpleasant to the opponent. A credible threat to fight cannot buy peace by itself, and a perfect commitment can virtually guarantee war if the opponent's valuation is misjudged.*

It is worth noting that *crises that are peacefully resolved tend to involve higher military allocations than those that end in war:* either S_1 mobilizes a large enough force to deter S_2, or S_2 mobilizes a large enough force to compel S_1. These allocations are higher than the optimal war allocations that either state would make if they expect to fight for sure. In other words, arms buildups are not necessarily destabilizing in a crisis. In fact, they appear positively related to peace when it comes to threatening the use of force.

To see how S_1 would choose his initial mobilization, if any, we must consider his expected payoffs in each of the possible continuation game equilibria. Since types III and IV involve the same expected outcomes, there are four distinct calculations he must make before choosing the one that yields the highest expected payoff. As noted above, it is not possible to express the solution α analytically, and since we have left F unspecified, writing out the expressions for S_1's choices is not very helpful. In order to conduct comparative statics analyses, I impose the additional assumption that F is the uniform distribution. This also allows me to reduce the expected payoffs for S_1 to manageable expressions, which I reproduce below.

In the type I equilibrium, S_1 obtains the prize with probability $\Pr(v_2 \leq \alpha) = \alpha$ by the distributional assumption, and concedes it without fighting with complementary probability. His expected payoff is:

$$EU_1^{\mathrm{I}}(m_1) = \alpha v_1 - m_1.$$

In the type II equilibrium, S_1 obtains the prize with probability $\Pr(v_2 \leq \delta) = \delta$, fights a war with probability $\Pr(\delta < v_2 \leq \beta) = \Pr(v_2 \leq \beta) - \Pr(v_2 \leq \delta) = \beta - \delta$, and concedes the prize with probability $\Pr(v_2 > \beta) = 1 - \Pr(v_2 \leq \beta) = 1 - \beta$ (which one can obtain by taking $1 - \delta - (\beta - \delta)$ as well). Noting that $f(v_2) = 1$ by the distributional assumption and

[22] This is reminiscent of war in the complete information setup in Powell's (1993) guns-versus-butter model.

that

$$W_1^d(m_1, m_2^*(v_2)) = \frac{v_1}{v_2}\sqrt{\frac{m_1 v_2}{\lambda}} - c_1 - m_1,$$

his expected payoff is:

$$\begin{aligned} EU_1^{\mathrm{II}}(m_1) &= \delta(v_1 - m_1) + \int_{\delta}^{\beta} W_1^d(m_1, m_2^*(v_2))\, f(v_2) dv_2 + (1-\beta)(-m_1) \\ &= \left[\delta + 2\sqrt{\frac{m_1}{\lambda}}(\sqrt{\beta} - \sqrt{\delta})\right] v_1 + (\beta - \delta)(-c_1) - m_1 \end{aligned}$$

In the type III and type IV equilibria, S_1's expected payoff is:

$$\begin{aligned} EU_1^{\mathrm{III,\,IV}}(m_1) &= \int_0^{\delta} (v_1 - m_1) dv_2 + \int_{\delta}^{1} W_1^d(m_1, m_2^*(v_2))\, f(v_2) dv_2 \\ &= \left[\delta + 2\sqrt{\frac{m_1}{\lambda}}(1 - \sqrt{\delta})\right] v_1 + (1-\delta)(-c_1) - m_1 \end{aligned}$$

Finally, in the type V equilibrium, S_1's payoff is:

$$EU_1^{\mathrm{V}}(m_1) = v_1 - m_1.$$

Note that δ is strictly increasing in m_1. For very low values of m_1, type I always exists regardless of the values of the exogenous parameters. As m_1 increases, if (12) is violated while $\alpha < \delta$, then all paths will be of type I while $\alpha < 1$ or type V otherwise. It is quite possible for all paths to be of type I only in this scenario. If, on the other hand $\alpha > \delta$ before condition (12) is violated, path II may occur if (13) is satisfied. Otherwise, this path may not occur at all. Then increasing further m_1 yields paths III, IV, and V in that order. Thus, S_1 maximizes his payoff using the expressions above. Should all feasible allocations produce an expected payoff less than zero, then S_1 simply quits immediately at the outset without mobilizing anything. Finally, note that in equilibrium there can be only one **assured deterrence** allocation level by S_1, because if there were two, then S_1 could profitably deviate to the lower one.

I now provide two numerical examples that will facilitate the substantive discussion. Assume the uniform distribution for S_2's valuations, and set the parameters $v_1 = 0.6$, $c_1 = 0.2$, and $\lambda = 0.99$. In the simulation in Figure 1, S_2's costs of fighting are high, $c_2 = 0.35$, and in the simulation in Figure 2, her costs of fighting are low, $c_2 = 0.01$. The solid line shows the range of values for m_1 for which the various equilibria exist. The dotted vertical line shows S_1's valuation for reference, and the solid vertical line shows S_1's equilibrium mobilization level.

In the first example, the equilibrium outcome is peace: one of the actors will capitulate. S_1 mobilizes $m_1^* = 0.07$, and takes his chances that S_2 may be a high-valuation type that would compel him to capitulate. The assured compellence level is $\overline{m}_2 = \alpha = 0.33$. The probability that S_1's low mobilization level would be able to deter S_2 is $\Pr(v_2 < \alpha) = 33\%$, so the risk of having to concede is 67%. All types $v_2 < \alpha$ quit and S_1 gets to keep the territory. On the other hand, all types $v_2 \geq \alpha$ allocate $\overline{m}_2$, after which S_1 relinquishes the territory without a fight.

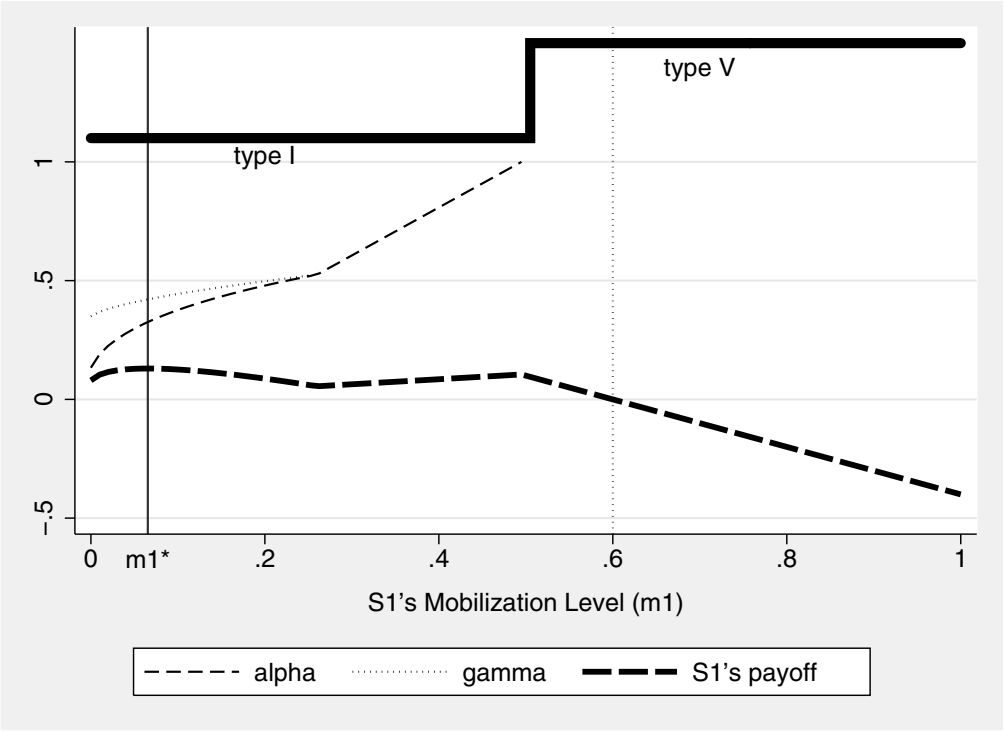

Figure 1: Assured Compellence Equilibrium with Bluffing, High-cost S_2.

In the second example, the outcome can be either capitulation by one of the actors or war. S_1's optimal mobilization increases to $m_1^* = 0.25$. What follows depends on just how high the challenger's valuation is. If it is $v_2 < \delta = 0.36$, then S_2 would be deterred from mobilizing, and the outcome would be peace. If it is $v_2 \geq \beta = 0.55$, then S_2 would mobilize at the assured compellence level $\overline{m}_2 = \alpha = 0.50$, S_1 would capitulate, and the outcome would be peace again. However, if $v_2 \in [0.36, 0.55)$, then S_2 would allocate her optimal fighting level $m_2^*(v_2) < 0.50$, and the outcome would be war. The ex ante probability of war is 19%, but conditional on S_2's mobilization it is 30%, with war being certain if S_2's mobilization level is less than $\overline{m}_2$.

S_1's expected payoff in this equilibrium is 0.02, which is much less than the 0.13 he would expected in the previous example. This is not surprising, as S_2's costs of fighting decrease, so does S_1's equilibrium payoff: to wit, his opponent is able to extract a better deal because going to war is not as painful, and so the threat to do it is much more credible.

6 Discussion

Fearon (1997) offers a very useful study that nicely brackets the analysis presented here. He analyzes the two polar mechanisms for signaling interests: through actions that involve sunk costs only, and actions that tie hands only. My model essentially encompasses everything in between, that is, actions that both tie hands and sink costs, and so it is worth comparing the results.

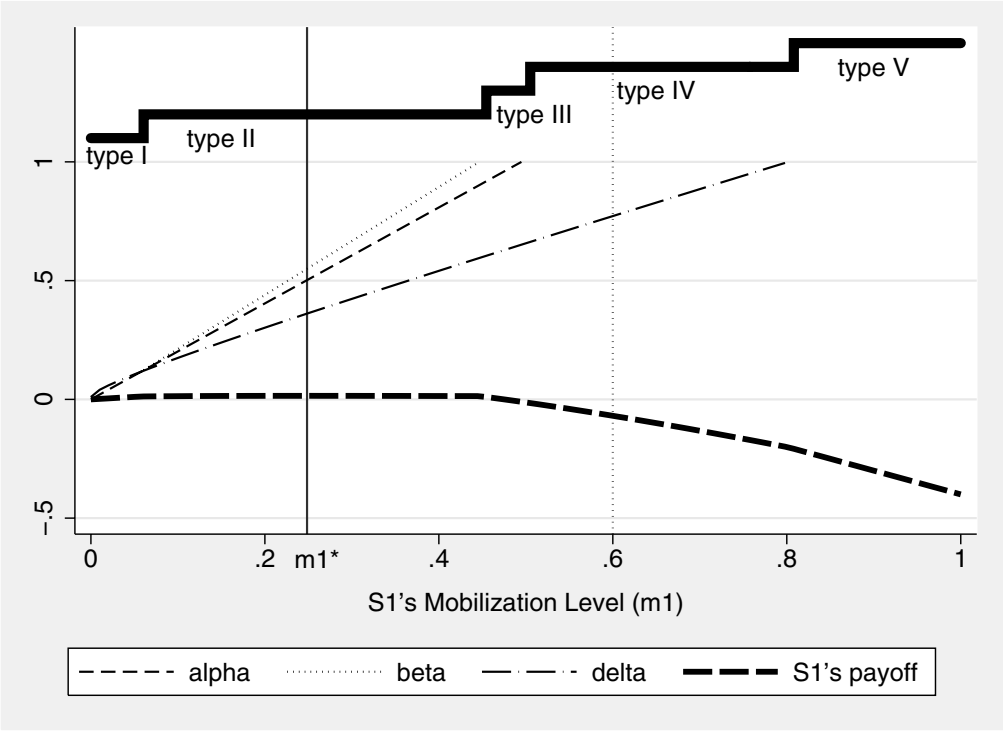

Figure 2: Risk of War Equilibrium, Low-cost S_2.

6.1 Bluffing with Implicit Threats

The most obvious difference that is of great substantive interest is that actions involving each mechanism separately result in equilibria where bluffing is not possible.[23] As it turns out, this result is unstable.

Take, for example, the assured compellence equilibrium in Figure 1. There are bluffers here: all $v_2 \in [\alpha, \gamma) \equiv [.33, .42)$ would not attack should S_1 decides to resist. The ex ante probability of a bluffer is $\Pr(\alpha \leq v_2 < \gamma) = 9\%$, which increases to 13% after S_2 mobilizes. However, even though now S_1 is far more likely to be facing a bluffer, he is also far more likely to be facing a genuine challenger (87% versus an initial 58%), and so he chooses not to resist. The small mobilization has successfully screened out low-valuation types and S_1 is unwilling to run a risk of war at this stage. Note that S_1 could have eliminated all bluffers if he wished to do it by allocating approximately $m_1 = 0.28$ (this is where $\gamma = \alpha$), but doing so is not optimal. Hence, not only is bluffing possible in equilibrium but S_1 would not necessarily attempt to weed out such challengers.

On the other hand, bluffing is impossible in equilibria that involve genuine risk of war. Consider Figure 2: there can be no bluffing here, for a bluffer would have to mobilize at the assured compellence level—otherwise she would be forced to back down when S_1

[23] That is, no equilibria that survive the Intuitive Criterion (Cho and Kreps 1987) involve bluffing. Fearon (1997, p. 82, fn. 27) notes that it is unrealistic to assume that "sunk-cost signals have no military impact," and conjectures that the strong no-bluffing result would obtain even when we relax that assumption.

resists and suffer the costs of mobilization—and this level is too high given S_1's initial mobilization.

Hence, bluffing is possible only in equilibria that do not involve much revelation of information and no danger of war. This corresponds to results in Brito and Intriligator (1985) who also find that in the pooling (no signaling) equilibrium bluffing is possible but the probability of war is zero. Preventing bluffing involves pre-commitment to a positive probability of war, and the willingness to run this risk does transmit information.

The model demonstrates a subtle distinction in the conditions that permit bluffing. Bluffing is only optimal when S_1 is expected to capitulate, but his willingness to do so depends on how likely S_2 is to fight, which in turn depends on S_2's costs of fighting and S_1's mobilization level. *Paradoxically, bluffing by S_2 is possible only when her costs of fighting are relatively high (she is "weak").* The reason is the effect this has on S_1's decision: because S_2 is weak, and therefore not very likely to be willing to mobilize at a high level, S_1 reduces his own costly allocation and thereby exposes himself to the possibility of having to concede. *It is this low mobilization that makes bluffing an option: one must choose to expose oneself to bluffing. It is always possible to eliminate that possibility by making it too dangerous a tactic.* When S_2 has relatively low costs of fighting (a "strong" actor), S_1 knows that low mobilization would virtually ensure his capitulation, so he ups the ante, eliminating bluffing possibilities in the process. Essentially, bluffing becomes too expensive even if it is certain to succeed. For this result to obtain, mobilization must both be inherently costly and increase probability of victory.

Fearon buttresses his no-bluffing results by quoting an observation by Brodie (1959, p. 272, emphasis added), who states that "bluffing, in the sense of deliberately trying to *sound* more determined or bellicose than one actually felt, was by no means as common a phenomenon in diplomacy… it tended to be confined to the more *implicit* kinds of threat." I have emphasized the distinction between verbal threats and implicit threats because it is very important. Reputational concerns may eliminate the incentives to bluff with words (Sartori 2002, Guisinger and Smith 2002), but may not work for implicit threats, such as the ones in this model. As Iklé (1964, p. 64) observes, "whether or not the threat is a bluff can be decided only after it has been challenged by the opponent's noncompliance." But probing an implicit threat is too dangerous because by its very nature, and unlike words, it influences the expected outcome of war. In equilibrium, these types of bluffs are never called, and hence S_2 is never revealed as having made an incredible threat. As Powell (1990, p. 60) concludes, "sometimes bluffing works."

6.2 Militarized Coercion

Many scholars have argued that mobilization is exceptionally dangerous, and in fact some have gone so far as to claim that the interlocking mobilizations in the summer of 1914 made the First World War practically inevitable (Tuchman 1962, Taylor 1969). However, historically this contention rests on dubious foundations—mobilizations have occurred numerous times before and since without war breaking out.[24] As Count Witte's quote illustrates, statesmen may not necessarily view mobilization as a prelude to war. Then what is mobi-

[24]For an incisive criticism of the mobilization causes of the First World War, see Trachtenberg (1991).

lization supposed to accomplish?

The answer suggested in this study is that *while mobilization can be a form of militarized coercion, it also may simply be a preparatory step on the road to war utterly devoid of informational content that is of any use for the peaceful resolution of the crisis.* For mobilization to succeed as a signaling device, it has to accomplish two objectives: it has to (a) persuade the opponent that one is extremely likely to attack if one's demands are not met, and (b) render fighting sufficiently unpleasant for the opponent.

It is worth emphasizing that peace does not depend only on the credibility of threats. In fact, when war occurs in equilibrium, both actors possess perfectly credible threats and both know it. However, their prior actions have created an environment where neither finds war sufficiently unpleasant compared to capitulation. This illustrates the danger of committing oneself without ensuring that the opponent is not similarly committed (Schelling 1966). While this may happen easily when actors move simultaneously, it is perhaps surprising that it can also happen when they react sequentially and seemingly have plenty of opportunity to avoid it.[25]

Again, the reason is the costliness of the military measure. While high mobilization levels tie one's hands, their inherent costliness means that an actor is not free to choose the highest commitment level possible. This contrasts with the results from the model where such commitments are not inherently costly and actors can therefore generate arbitrarily large audience costs.[26] There may exist circumstances where although peace is, in principle, obtainable (e.g. types II, III, and IV), the cost of guaranteeing it is so high that the actors are unwilling to pay it.

Peace in this model requires the successful compellence of S_1 or deterrence of S_2. In a situation where the value of war is determined endogenously, each actor can potentially be coerced into capitulation. The interesting question becomes why sometimes one or both of them choose not to do it. There are, of course, the trivial cases where the cost of doing that exceeds one's valuation so it is not worth it (type V), but, more intriguingly, there are the cases where the necessary allocation costs less than one's valuation. In the second example, all types $v_2 \in (\alpha, \beta)$ fight optimally even though allocating $\overline{m}_2 = \alpha$ would ensure S_1's capitulation.

Mobilization can be exceedingly dangerous even without making war certain. After a point, signaling becomes useless because even convincing the opponent that one would fight is not enough to get him to quit. *The greatest danger of war is when the informed party has enough wealth to adopt a separating strategy but not enough wealth to adopt a strategy that pools on the higher assured compellence level,* a result that parallels a finding in Brito and Intriligator (1985).

Military coercion is a blunt instrument because its intent is not to reveal the precise valuation of the informed party but rather to communicate one's willingness to fight. While much nuance is possible if actors had in mind the former goal, the latter is of necessity rather coarse. That one must resort to tacit bargaining through implicit threats cannot improve

[25] For example, consider the game of Chicken and suppose each player could pre-commit to remaining firm. If one of them manages to pre-commit first, the other has no choice but avoid such commitment and yield. If they choose whether to pre-commit simultaneously, then they may easily end up in a situation where they both pre-commit to stand form, and so disaster is certain.

[26] Fearon (1997, p. 82) criticizes audience cost models on precisely such grounds as well.

matters. Historians have emphasized the difficulty in clarifying "the distinction between warning and intent" (Strachan 2003, p. 18). Perhaps it was precisely because mobilization has a rather limited bargaining role that is hard to disentangle from simple preparation for war, that mobilization has traditionally been considered very dangerous.

6.3 What Makes a Strong Opponent?

Military coercion has a somewhat peculiar dynamic that was completely lost to models that ignored the war-fighting implications of military measures. For example, it is now generally accepted that the "stronger" the actor, the more willing he is to risk war in order to obtain a better bargain. The risk-return trade off then resolves itself in higher equilibrium probability of war and a better expected negotiated deal.[27] When crisis behavior cannot influence the expected value of war, it is unproblematic to define an actor ex ante as "stronger"—the label simply refers to an actor with a larger expected war payoff. Costs of fighting (low), probability of winning (high), military capabilities (large), all these factors can be lumped together to produce an aggregate expected payoff from fighting (high), which in turn defines the actor's type (strong). Even before the crisis begins, potential opponents can be indexed by their war payoff, and bargaining reduces to attempts to discern just how strong the opponent really is.

Things are not that simple in a crisis environment where strength is, at least in part, endogenously determined by the mobilization decisions of the actors. Keeping all other variables equal, an actor can render himself relatively stronger if he mobilizes more, or weaker if he fails to do so. This now implies that it may be quite difficult indeed to predict the outcome of any particular crisis before it actually unfolds, which may help explain why states end up creating so many of these.

The model shows that the expected payoff from the crisis does increase in the actors' valuation of the issue, but not necessarily at the cost of a higher risk of war. In other words, the risk-return trade off does not necessarily operate in this context, where the relevant trade off is between signaling cost and expected return, which subsumes the risk of war. To see that, consider the type II equilibrium. All low-valuation types capitulate immediately, and so face zero probability of fighting. All mid-valuation types mobilize their optimal fighting allocations, and the probability of war jumps to one. On the other hand, high-valuation types manage to scrape together the assured compellence level, which resolves the crisis with S_1's capitulation, and the probability of war drops back to zero. In other words, while these types do spend more during the crisis, they obtain the surrender of their opponent without risking war. The possibility to compel S_1 arises out of the latter's initial decision: he could have mobilized enough resources to make himself uncompellable by even the highest valuation type but because of uncertainty, it is not optimal to do so. This is not to say that technology, war costs, and capabilities are not important—indeed, the two examples show the impact of S_2's war costs—but rather that the commonly accepted crisis dynamic may not hold in these situations.

[27] Banks (1990) provides the canonical treatment for one-side incomplete information. These results extend to the two-sided case **CITE ARTICLE**. For more on the risk-return trade off in the context of bargaining in the shadow of power, see Powell (1999).

Further, S_1's optimal mobilization is not monotonically related to either his fighting costs or those of S_2. For example, recall that when $c_2 = 0.01$, $m_1^* = 0.25$ in the type II equilibrium (Figure 2). Increasing S_2's costs to $c_2 = 0.25$ produces $m_1^* = 0.50$ in a type I equilibrium with no bluffers. Increasing them further to $c_2 = 0.35$ produces $m_1^* = 0.07$ in the type I equilibrium with bluffers (Figure 1). Note the distinction between the last two outcomes. When S_2's costs are intermediate, S_1 eliminates all bluffers and practically ensures that he would obtain S_2's capitulation (the probability of him having to concede instead is less than 1%). When S_2's costs increase further, S_1 responds by drastically slashing his own military spending, even exposing himself to bluffing by doing so. While he is now quite likely to concede (67%), his loss in this case is not too drastic because of the savings from the low allocation. In the previous case, on the other hand, while he was nearly certain to win, the cost of doing so was quite high, making this tactic no longer profitable. In expectation, S_1's payoff does increase in c_2, and he obtains 0.13 in the latter case as opposed to 0.11 for the intermediate costs case. Perhaps counter-intuitively, *the status quo power is more likely to concede when his opponent is weaker (has higher costs of fighting) but equilibrium mobilization levels will be lower.*

6.4 The Price of Peace

Figure 3 illustrates the impact of varying S_1's costs. It shows the ex ante probability of war, S_1's optimal allocation, and his payoff in equilibrium for various values of c_1. The parameters are set to $v_1 = .999$ (so high costs do not become immediately prohibitive), $\lambda = .99$, and $c_2 = 0.10$.

The non-monotonicity is again evident. Because of his extremely high valuation S_1 cannot be compelled if his costs are relatively low. It is only at intermediate costs ($c_1 > 0.30$) that compellence becomes feasible again. However, S_2 will not attempt it in equilibrium, and hence up to $c_1 \approx 0.35$, war is certain if S_2 mobilizes. The ex ante probability of war declines across this range but m_1^* increases. That is, seemingly aggressive mobilization behavior can be seen as S_1 compensating for the relative weakness in war occasioned by somewhat high costs: since war is more painful, he is prepared to pay more to decrease the chances of having to fight it. Nothing, of course, can help S_1 overall in the sense that the costlier the fighting, the less must he accept in expectation.

Continuing the increase of c_1 makes assured compellence not just feasible but also desirable, and from $c_1 \approx 0.35$, no equilibrium outcome will involve war because S_1's high costs make fighting quite unattractive for him. Peace can be had in two ways: either S_1 can deter his opponent, or S_2 can compel her opponent. S_1's behavior in the intermediate cost range is rather intriguing. While he can afford it, his strategy is to deter S_2 or, failing that, ensure that the probability of a challenge (to which he will surely concede) is relatively low. Note that until $c_1 \approx 0.45$, the outcome is either assured deterrence or assured compellence but with extremely high mobilization levels by S_1. Even after it becomes impossible to deter all types of S_2, the status quo power persists in very high allocations that minimize the probability of having to concede in the type I equilibrium (less than 0.1%). This is where peace can be very expensive.

Finally c_1 becomes prohibitively high, and S_1 drastically revises his strategy: maintaining a low probability of concession becomes too expensive. The trade-off between the

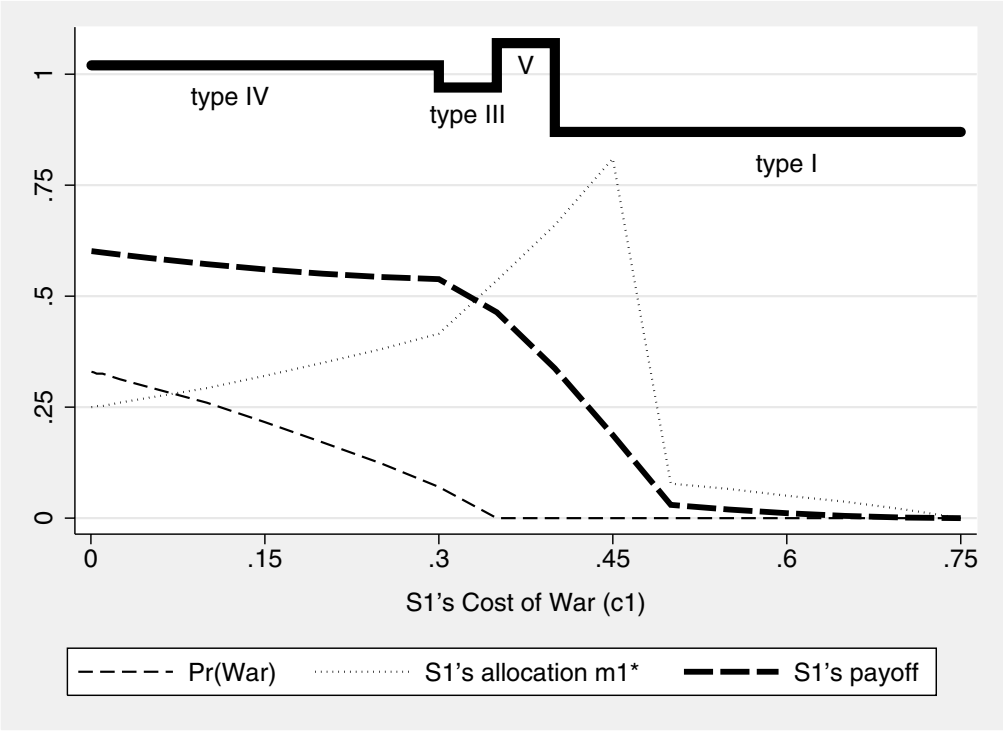

Figure 3: Probability of War and Optimal Allocations by S_1.

costs of mobilization and expected concessions kicks in, and S_1 precipitously decreases his allocation, exposing himself to ever increasing possibilities for bluffing as his costs go up.

As Figure 2 made clear, S_2 types with high valuations must spend substantially more to compel S_1 to capitulate than to fight him. This is, perhaps, not very surprising: given the initial mobilization by the status quo power, it may take a lot of threatening to persuade him to relinquish the prize peacefully. Still, it does go to show that peace can be expensive. This conclusion receives very strong support once we investigate the initial decision itself, as we did above. *Peace may involve mobilizations at levels that are substantially higher than mobilizations that precede the outbreak of war. The price of peace can be rather steep either for the status quo state or for the potential revisionist.*

As war becomes costlier, S_1 minimizes the probability of having to wage it, even when this requires skyrocketing mobilization costs. The goal of avoiding war transforms into the goal of avoiding concessions, and S_1 spends his way into successful deterrence until that, too, becomes too expensive. When this occurs, S_1 simply "gives up" and switches to having a permanent, but small, military establishment. That is, he mobilizes limited forces he does not expect to use, and whose impact on the potential revisionist's behavior is rather minimal. These "useless" mobilization levels do serve to weed out frivolous challenges, but generally do not work as a deterrent to genuine revisionists or to bluffers.

The peace need not be expensive if either actor has very high costs of fighting. The price of peace raises steeply, however, when these costs go down. Powell (1993) finds that the peaceful equilibrium in a dynamic model where states redistribute resources away

from consumption toward military uses also involves nonzero allocations, which sometimes can be quite substantial. The results here underscore his conclusions and provide a subtle nuance to their substantive interpretation and empirical implications. These findings further imply that *the common assumption of a costless status quo outcome in formal models may be quite distorting because it fails to account for the resources states must spend on mutual deterrence to maintain it.*

6.5 Rationalist Explanations of War

Blainey (1988) argues that war must be explained in terms of deliberate choices by state leaders. The formal literature generally offers two such explanations (Fearon 1995). One reason bargaining can end in war relates to the simple fact that leaders possess private information about their expected payoffs from war and peace, and they have incentives to misrepresent this knowledge to extract bargaining advantage. War can break out when actors bargain in the shadow of power, engaging in the risk-return trade off: they run a slightly higher risk of war in return for obtaining slightly more at the bargaining table (Powell 1999). When private information exists, actors may press their opponents beyond their tolerance thresholds. When this happens, bargaining breaks down in war. In this explanation, war is a sort of mistake: without uncertainty, actors could agree on a bargain mutually preferable to war. So the puzzle is: why would they not immediately terminate hostilities once they realize they have demanded too much? Slantchev (2003*b*) attempts to provide a partial answer to this by extending the persistence of uncertainty from the crisis into the war. However, this is still not a particularly satisfying explanation, especially for wars that last a long time, and wars that are supposedly caused by the risk-return dynamic.

It is crucial, therefore, that we understand incentives for conflict under complete information. Slantchev (2003*a*) analyzed one possibility where fear of early settlement drives inefficient behavior, but while the model does produce this in equilibrium, it is not at all clear why actors would choose such a bad equilibrium given the presence of efficient peaceful ones. The rationalization offered in that article itself relies on incomplete information and has a strong ad hoc flavor. A better alternative is to examine conditions that ensure that such peaceful efficient alternative equilibria do not exist. Powell (2004) shows such a sufficient condition for a class of stochastic games. Still, the puzzle is not quite resolved because this condition generates a type of commitment problem that relies on an exogenous shift in the distribution of power between the actors, and, as I have argued above, this is not a realistic assumption in our environment because the actors do possess some ability to influence this shift. We should, therefore, expect them to behave in a way that would ameliorate or eliminate this type of commitment problem.

We thus come back to our original puzzle: why would rational actors fight when war is inefficient? The model provides one possible answer that overcomes some of the shortcomings of our existing explanations. It is a two-step explanation: *actors fight with complete information because they create a situation where they have incentives to do so, and this situation arises because of the actors' crisis behavior under uncertainty.* In other words, asymmetric information causes actors to risk committing too much (so they would not want to back down if resisted) but not quite enough to force their opponent to back down (and so the opponent resists). While the lock-in occurs because actors have private information and

incentives to misrepresent, war occurs because actors simply find it the better option in the new environment where all information has been revealed. *The tragedy of crisis bargaining in the shadow of power is that actors may end up creating the circumstances that make war the best choice, circumstances they would have loved to avoid, and ones they would have avoided had they possessed complete information from the very beginning.*

To see how this logic operates, let's examine the example in Figure 2 with complete information. Suppose $v_2 = 0.5$, i.e. she is one of the types that would end up in a war under incomplete information. As the subgame perfect solution in Appendix A shows, war does not occur now. Instead, S_1 allocates $m_1^* \approx 0.37$, and S_2 capitulates immediately. The outcome is successful deterrence by S_1.

What is especially striking about this result is that S_1 achieves deterrence even though his best war fighting payoff (-0.02) is worse than immediate capitulation (0). Why does this work? Because sinking the mobilization cost makes capitulation costlier than before: if S_2 resists, the new choice S_1 has is between quitting (which now yields a payoff of -0.37, the sunk cost of mobilization), and fighting. The payoff from fighting at $m_1 = 0.37$, assuming S_2 mobilizes at her optimal level $m_2^*(0.37)$, would be at least -0.05. Thus, S_1 has tied his hands by sinking the mobilization costs at the outset, and he will certainly fight if challenged now even though he would have capitulated rather than fought at the outset. Because of S_1's rather high mobilization level, fighting becomes too painful for S_2 and so she capitulates.

Contrast this with the results under asymmetric information, where S_1 allocates $m_1^* = 0.25$. First, this is less than what is required to get S_2 with valuation $v_2 = 0.5$ to capitulate ($m_1 \geq 0.37$). Second, it is more than the maximum mobilization at which S_2 would bother getting S_1 to capitulate ($m_1 \leq 0.23$). In other words, S_1's mobilization level is too high for him to backtrack once S_2's valuation is revealed given what S_2 is willing to do, but it is too low to get S_2 to capitulate either. The outcome is war: S_1's actions have now created a situation where neither opponent is prepared to back down. This situation arises because of uncertainty and would not have occurred had S_1 known his opponent's valuation from the beginning. Signaling for S_2 is pointless even though it perfectly reveals her valuation, and so her mobilization is simply preparation for war, not a warning.

The immediate reaction to this conclusion would be to ask the original question once again, this time applying it to the final stage prior to the outbreak of war: after all information has been revealed, shouldn't the actors strike a bargain? There are three ways to approach this. First, one can argue that certain situations involve threats to use force if one oversteps some boundary or fails to comply with a particular demand, and as such may not be open to negotiations about distribution of benefits. For example, following U.S. mobilization to eject Saddam Hussein from Kuwait, there were some last-minute attempts to compel Iraq to withdraw without a war. One of them was a proposed meeting Foreign Minister Tariq 'Aziz of Iraq and Secretary of State James A. Baker III. President Bush described the intent as follows:

> This offer is being made subject to the same conditions as my previous attempt: no negotiations, no compromises, no attempts at face-saving, and no rewards for aggression. What there will be if Iraq accepts this offer is simply and importantly an opportunity to resolve this crisis peacefully.[28]

[28] Statement of January 3, 1991. http://bushlibrary.tamu.edu/research/papers/1991/91010300.html. Accessed

While it is possible that the President was making this claim for strategic purposes, the events that followed demonstrated that in January, the U.S. was in no mood to negotiate anything but the unconditional liberation of Kuwait. The decision to cross the 38th parallel in Korea, discussed in more detail later, was also about overstepping a limit set by the opponent. Hence, such a model can apply in certain situations but perhaps not in others.

Second, one can argue that eleventh-hour negotiations may be impossible either because of risks of preemptive attack or because of inability to maintain combat readiness for too long. For example, since mobilization cannot be maintained indefinitely, there is a risk that if one fails to strike and has to disengage, the process of demobilization would leave one vulnerable to attack. A combination of mobilization pressure and fear of surprise attack was the main contributing factor to Israel's decision to strike Egypt preemptively in 1967 even against the vociferous opposition of the Americans (Oren 2002).

The third, and perhaps best, option would be to resolve this theoretically by incorporating a richer bargaining framework into the model. However, this would overburden the present model and detract from the main points I would like to make in this article. As such, I prefer to open a venue for further research, and provide a tentative answer with appropriate qualifications and caveats.

7 The Korean War Expands

It is not my purpose to investigate the origins of the Korean War, or to trace the confusing interaction between Pyongyang, Beijing, and Moscow prior to its outbreak. Rather, it is to offer an argument that explains why the U.S. and China ended fighting with each other even though neither one initially wanted to. In doing so, I challenge some existing interpretations and show how the model can illuminate some of the complex dynamics during the crucial weeks in late September and early October.[29] The following discussion should not be treated as a "test" of the theory; in fact, I chose the historical case specifically to demonstrate how the model can be applied to clarify a hotly contested issue. On the other hand, the evidence seems to support the counter-factual claims that the model shows as necessary to sustain equilibrium behavior, and so in a sense, provides support for the causal mechanism identified by it.

7.1 The U.S. (Mistakenly) Dismisses Chinese Threats as Bluffs

In a recent article, Sartori (2002) argues that the U.S. "misread China's myriad threats as bluffs... China's failure to communicate its resolve contributed to the ensuing tragedy." This interpretation of the events in September-November 1950 goes directly against the intuition offered in this article, and so presents a good case to examine. Signals that the opponent disbelieves never cause war in this model. When war does occur, it is always after the uncertainty is resolved, and when there is no doubt about the credibility of the threat. Instead, war occurs when the two actors lock themselves in a situation where war is inevitable.

September 10, 2004.

[29] For an excellent summary of Korean War studies, see Brune (1996). Chen (1996) offers a fascinating glimpse at the chequered history of the scholarship on the Chinese intervention itself.

To support the claim that costless diplomacy could matter but did not in the Chinese intervention case, Sartori has to argue convincingly that (a) the Americans did, in fact, make a mistake; that (b) if they had correctly interpreted Chinese signals, their actions would have been different; and that (c) China had undermined its ability to signal through its earlier behavior over Taiwan. I will not take up (c), although one has to wonder why, if the U.S. really did not believe China because of its failure to liberate Taiwan, the first thing Truman did upon the outbreak of the war was to send the Seventh Fleet to the straits to prevent that very outcome.[30]

I will address (a) and (b) because they bear directly on the rival interpretation offered by my model. I will show that the United States hoped China would stay out of the conflict but that, after Inchon, it was quite prepared to fight if it did not. At this point, there was no way the U.S. would have backed down in the face of direct Chinese threats, even if they were completely credible. Contrary to the failed communication interpretation, the Chinese intervention resulted from the military and political momentum created by the success at Inchon on the U.S. side, and Soviet support for it on the Chinese side. Consistent with the logic of the model, in November the two antagonists had committed themselves to war, and whatever residual uncertainty over Chinese intentions there may have been, it was not the cause of the war's expansion.

Sartori argues that "the relevant question here is whether MacArthur and other top leaders believed China's threats, not what MacArthur or the United States would have done had they believed them" (p. 138). This is a curious argument. First, everyone in the American government who wanted to fight China would have an incentive to claim that China was bluffing when arguing with others who were not nearly as resolved but whose support was necessary to carry the war over into the North, provoking that very intervention. The hardliners, like MacArthur, who would not be believed because of this incentive would further argue that even if China intervened, the U.S. forces would defeat it. Sartori cites the Wake Island conference when MacArthur told Truman that he did not believe China would enter the war (p. 138), but his full statement was that even if it did, he would defeat it easily.[31] Protestations expressing conviction that China is bluffing are too self-serving to be taken at face value. Second, the evidence most damaging to the failed communication thesis is that the war did not come to an end after the U.N. forces came into contact with the Chinese troops, thereby revealing Mao's serious resolve; the war did not end for years after that

[30] As for the use of costless signaling, Acheson seems to have argued that there was a tendency to dismiss Chinese posturing precisely *because it was not costly enough*. For example, in a memorandum of October 4, "The Secretary pointed out that the Chinese Communists were themselves taking no risk in as much as their private talks to the Indian Ambassador could be disavowed... If they wanted to take part in the 'poker game' they would have to put more on the table than they had up to the present," cited in Schultz (2001*a*, p. 41). I leave aside the somewhat strange choice of a case of failed diplomacy in the original article whose purpose is to argue that diplomacy (cheap talk) does have an effect after all.

[31] As he put it, "if the Chinese tried to get down to Pyongyand there would be the greatest slaughter." MacArthur was saying that the chance of Chinese intervention was slight because they had no capability with which to effect it, and because had they been capable of intervening, they would have done much earlier, while the U.N. forces were much more vulnerable, not now, when they would be pulverized by the U.S. Air Force against which they had no defenses. See "Substance of Statements made at Wake Island Conference, dated 15 October 1950, compiled by General of the Army Omar N. Bradley, Chairman of the Joint Chiefs of Staff," available online at http://www.trumanlibrary.org/wake/Wi198_1.htm. Accessed September 20, 2004.

revelation.

The fundamental problem with Sartori's explanation is that it asks the wrong question. It is not why the Americans dismissed China's signals as bluffs, but why the Americans persisted despite the danger of Chinese intervention that they considered very likely, and why the Chinese intervened when they knew that they would have to slug it out. For the model to provide a convincing explanation, I have to show that (a) the U.S. military capability and valuation of the issue were both high (so that the U.S. was not compellable except perhaps by a level of military mobilization that the Chinese could not achieve); that (b) the Americans were prepared to fight China, if necessary; that (c) China valued the issue enough not to be deterred; and that (d) the Chinese leadership knew that its military forces would not be sufficient to compel the U.S., and so mobilizing them would mean war with the Americans. The strongest support for the causal mechanism specified by the model would come from evidence that the Americans were ready to fight China (which would render any signaling superfluous anyway), and that the Chinese did not expect to be able to compel the Americans without fighting (and hence had no incentive to put much effort into diplomatic communications). I intend to show that signaling was a non-issue in this event, and that by October, the two sides had locked themselves into a situation that made war inevitable. While the U.S. hoped that the Chinese would stay out, a Chinese intervention by itself was not going to be sufficient to get it to alter the unification plans that had evolved in the aftermath of the amazing success at Inchon.

It is true that there was great doubt about Chinese intentions. Acheson did mention China's repeated warnings over Taiwan (the quote on which Sartori's entire case rests, and which is suspect too, as I note below), but the two main reasons seem to be purely military and do not require the "cried wolf" logic at all. First, MacArthur emphasized the military weakness of the Chinese who would not be able to function without Soviet support, which was not likely to be forthcoming. The perceived inability to wage war against the U.N. forces naturally made the threat seem less credible. Second, if the Chinese were serious, they could have intervened before the UN forces reached the 38th parallel: they could have occupied North Korea, effectively stopping the armies surging up from the South at that line. MacArthur even mentioned that such an action within the first few weeks would have been decisive. But they did not, so perhaps they did not think they could do it after all?

How much confidence can we place in statements professing surprise at the Chinese intervention after the fact and firm belief that they were bluffing prior to it? How much confidence, especially given that the administration was quite aware that it could not proceed openly with a policy that would certainly provoke the Chinese, and possibly the Russians? How much confidence, given the fact the U.S. proceeded to attempt to implement its post-Inchon goals despite the intervention, and despite the three week-long pause in fighting when the Chinese disengaged from U.N. forces in early November. This puzzling behavior may have reinforced the impression that the Chinese would not seriously fight. It was not until after November 24 that the JCS and the military advisors understood just much they had underestimated their enemy. The Chinese themselves floated demands they knew the U.S. would never accept (withdrawal of US fleet from the straits, withdrawal of recognition from Taiwan), and rejected an initiative (through Sweden) to establish a buffer zone south of the Yalu. They wanted "withdrawal of foreign forces from Korea" as Acheson summarized his impression.

Whatever doubt there was about Chinese intentions, an intervention by China was not thought to be likely to produce a general war unlike an intervention by the USSR. The military believed that the U.N. forces could defeat the Chinese should they go in, and the administration in Washington seems to have shared this view. To allay fears in the U.N. that the US was not doing enough to reassure the Chinese, the administration did not even want to bring the decision to cross the 38th parallel to an explicit vote. Instead, they chose to present it as a fait accompli due to military necessity. The goal now was unification of Korea and destruction of the Pyongyang regime, something that many U.N. members would balk at supporting. While a massive Soviet intervention would probably have ended the war in 1950, China could not have done it for it was perceived to be too weak to precipitate a general war, the one thing that the U.S. really wanted to avoid.

As Sartori approvingly quotes George and Smoke, "an unusual consistency and lack of 'noise; characterized Peking's efforts to signal its intentions" (188). Maintaining resolute disbelief in face of such clear signaling would surely require a heroic and successful effort of self-delusion by a rather startling number of people on the American side. In addition, some of the alleged signals are not nearly as clear-cut. For example, in mid May the PLA redeployed 60,000 troops in the Northeast, which is supposed to show Chinese intentions with respect to Korea. She cites Whiting (1960), but his claims are very qualified: "these troops did not cross the Yalu River, nor did other units join the northeastern concentration until mid-September" (p. 64); and further, "this redeployment implemented directives on assignment of units to construction projects. It was paralleled by troop movements elsewhere, returning units to points of origin from which they had begun pursuit of Nationalist forces, or to permanent bases in designated army command areas. No troops other than those from the Fourth Field Army entered Northeast China at this time" (p. 23). He even concludes that as of "June 1950, the bulk of the PLA seemed scheduled for 'pacification' and economic construction assignments, pending gradual conversion to civilian status" (p. 22). The overt massive redeployment of troops to possible jump-off sites in the northeast did not begin until mid-September (Whiting 1960, pp. 118-122).

Initially, Mao did not assign much priority to Korea at all, even after the war broke out. Instead, he concentrated on the impending invasion of Taiwan. Mao sanctioned the "liberation" of Taiwan on March 11, less than a month after the Sino-Soviet Treaty was signed. On April 16, the PLA attacked Hainan Island and defeated the Nationalists in two weeks (it was units from this, Fourth Field Army, that were moved northeast). By early June Mao had decided to postpone the invasion until the summer of 1951 because of the slowness of the mobilization effort and the strains placed on the ravaged economy. Some skirmishing was to continue, however, and as late as June 12, the Chinese leadership authorized assaults on several offshore islands. The invasion plans were put on indefinite hold only on August 11, when Mao finally realized the Korean War would not be over soon (Goncharov, Lewis and Litai 1993, pp. 157-58). Still, even after the intervention, on October 28, Mao warned that U.S. deployment of the Seventh Fleet in the Straits was tantamount to war. When we consider the signaling role of troop movements, one has to wonder about the effect of Mao's decision on April 21 to demobilize a very significant portion of the PLA, whose strength went from 5 or 6 million men down to 3 or 4 million.

7.2 Why the War Expanded?

If it weren't then because of failed communication, then why did the war expand in October 1950? I claim that the answer can be illuminated by the type II equilibrium logic: prior to Inchon, the US was potentially compellable by a Chinese show of force, something Mao could not afford without Soviet support (which was not forthcoming), and something that he was not, at any rate, that interested in at that time. Given the precarious American position in the beginning of September, type I outcome would have occurred: China enters and the U.N. troops do not cross the parallel. However, the Inchon success effectively functioned as an increase in American mobilization level (high probability of victory if war with China occurs), leading to the type II equilibrium: If, and only if, China enters with overt Soviet support, the U.S. could still be compelled.

China's valuation was high enough not to accept the demise of DPRK, but it was not deemed sufficiently strong militarily without the Russians. Both countries had resolved to fight. Inchon had made the U.S. too strong to be compelled by China alone, and China was prepared to fight rather than see a capitalist unified Korea to its south. Note that while this equilibrium outcome is observationally equivalent to the type III and type IV equilibrium outcomes (war between the U.N. forces and China), there is strong evidence to suggest that the U.S. did remain potentially compellable even after Inchon, which rules out the other two possibilities.[32] The Chinese problem was not one of credibility, as commonly supposed, but rather of insufficient capability occasioned by the lack of direct and overt Soviet commitment. This explanation also goes a long way in accounting for the otherwise curious failure to end the war as soon as the Chinese intervention became an obvious fact.

7.3 U.S. Initially Compellable by Chinese Intervention

The war was not going well for the U.N. forces, by now squeezed into the tiny Pusan perimeter. On September 11, Truman approved the conclusions of NSC-81/1 and directed their implementation. The document stated flatly that "the political objective of the United Nations in Korea is to bring about the complete independence and unity of Korea" but it "would not be in our interest... to take action in Korea which would involve a substantial risk of general war" either with the Soviet Union or Communist China.

The analysis explicitly recognized that it was unlikely that the Soviet Union would "passively accept" a united non-communist Korea as long as this could be prevented without risking general war with the U.S., and "possible that the Soviet Union... may endeavor to persuade the Chinese Communists to enter the Korean campaign with the purpose of avoiding the defeat of the North Korean forces and also of fomenting war between the United States and the Chinese Communists should we react strongly." Further, it was "possible, but politically improbable, that no action will be taken by the Soviet Union or by the Chinese Communists to reoccupy North Korea or to indicate in any other way an intention to prevent the occupation of Northern Korea by the United Nations forces before the latter have reached the 38th parallel." It concluded that only in this "unlikely contingency... could

[32] Incidentally, the analysis shows that case studies can be extremely useful in making such counter-factual claims, something that a large-N study would completely miss but that is crucially important to sustain the logic of the argument based on the formal model.

the U.N. ground forces undertake to operate in or to occupy northern Korea without greatly increasing the risk of general war." The policy then argued for non-provocative behavior by proscribing the inclusion of non-Korean forces in ground units operating in the provinces bordering Manchuria or the USSR.

In short, the policy was to press forward with unification of Korea unless the Soviet Union intervened. In case major Soviet units entered Korea, the U.S. should negotiate immediately, even if that occurred before the U.N. troops had reached the 38th parallel. The document explicitly noted that military action beyond the 38th was "not clearly authorized by existing Security Council resolutions" and that the accomplishment of the unification objective would not be feasible "should the USSR announce its intention, or take military action, to prevent [it]." Obviously, NSC-81/1 was mostly concerned with Soviet behavior, which was in accordance with the prevalent view in Washington that Moscow was behind the war from the start.

7.4 Revision of U.S. Goals after Inchon

On September 15, General MacArthur's brilliant landing at Inchon drove a wedge in the extended supply routes of the North Korean army. Four days later, General Walker broke out of Pusan, and pushed steadily to the North. The DPRK army began disintegrating, and the Chinese panicked. On the 26th, the U.S. Moscow embassy reported a "momentous decision" by Mao to give military matters priority over economics (Goncharov, Lewis and Litai 1993, 170). On the very next day, Truman approved a draft directive by the Joint Chiefs of Staff based on NSC-81/1, which provided "amplifying instructions" to MacArthur (approved by the United Nations General Assembly on October 7). The General was permitted to cross the 38th parallel if doing so was necessary for the military destruction of North Korean forces, but only if at the time there had been no entry by "major Soviet or Chinese Communist forces, no announcement of intended entry, nor a threat to counter our operations militarily in North Korea."

What MacArthur was to do if the Soviets or the Chinese entered, however, was different, and in the Chinese case, ambiguous. If the Soviets intervened openly, whether north or south of the parallel, he was to assume the defensive and report to Washington. The instruction with respect to Chinese entry was muddled: if they intervened openly or covertly south of the parallel, MacArthur was to continue military operations as long as that offered a "reasonable chance of successful resistance." There was no instruction what to do if they intervened north of the parallel, even though MacArthur was clearly told what to do if the Russians did. This may seem as a minor point, but a day after this communique, MacArthur received another from Defense Secretary Marshall, who told him to "feel unhampered tactically and strategically to proceed North of the 38th parallel" and further told him not to announce that South Korean divisions would halt at the parallel so as to avoid precipitating a vote on the issue in the United Nations.[33] The objective had now become the political unification of Korea that only Soviet intercession could stop, and that a Chinese intervention

[33] Some accounts state bluntly that "in case of Chinese intervention MacArthur was to continue military action as long as it offered a reasonable chance of successful resistance" (Kaufman 1997, p. 56), but this would be overstating the clarity of the instructions, even if it may not be stretching their implied intent. It was the same author who characterized NSC-81/1 as a "web of ambiguities string along a fog of uncertainties" (p. 40).

might or might not.

Why would America take such a risk? While the Department of Defense had argued since August that the Kremlin would not intervene even if the 38th parallel were crossed, State officials were divided. Some insisted on rollback, echoing the DOD position, but others, like George Kennan, wanted a return to the status quo ante bellum because they believed China was virtually guaranteed to enter the fray (Kaufman 1997, p. 40). The counter-argument was that a successful attack across the parallel and subsequent unification of Korea would split China from the USSR, but the "wedge policy" became rather moot once it dawned on policymakers that the war was driving China ever more firmly into Soviet dependence. Still, peace was going to be too expensive and the U.S. could not just wait on China to come around at some distant and unclear point in the future (Gaddis 1989, p. 164).

It was clear that the U.S. had to forestall unification by Pyongyang: the consolidation of Soviet rule in Europe had shown all too clear what Communists intended to do once they were in control (Pollack 1989, p. 214). The "loss" of China also contributed in at least two ways. First, the U.S. now had to concentrate on helping Japan recover so that it could emerge as the American partner in the region. But if communists were allowed to have Korea, they would be able to threaten Japan (at 100 miles from Pusan). Second, the Truman administration was vulnerable to charges of "another Munich," and the domestic mood in America was not at all conducive to conciliatory diplomacy with any Red state (Kaufman 1997, p. 22). Hence, Korea had to remain non-communist, but stopping at the 38th parallel may not have done the trick. The Joint Chiefs of Staff "felt that if we were required to stop at the 38th Parallel, nothing would have been done to solve the real problem... if you stopped at the 38th Parallel, then the North Koreans, supported by the Chinese and the Russians, could once again attack when they were ready to. The 38th Parallel had no defensive merit whatsoever."[34] If the risk of general war were not high, then MacArthur had to continue.

7.5 The Chinese Decision to Enter

While the Soviets breathed not a word that could risk escalation to general war, the Chinese warned the U.S. publicly on the 30th through Zhou Enlai that they absolutely would not "tolerate foreign aggression," nor would they "supinely tolerate seeing their neighbors being savagely invaded by the imperialists." On the same day MacArthur informed Marshall that he regarded "all of Korea open to our military operations," and South Korean troops crossed the 38th parallel (Goncharov, Lewis and Litai 1993, 175). Adding oil to the fire, Ambassador Austin declared that "the aggressor's forces should not be permitted to have refuge behind an imaginary line... The artificial barrier which has divided North and South Korea has no basis for existence either in law or in reason" (Whiting 1960, 111).

In this heated atmosphere, and prodded by frantic messages from Kim Il Sung— one of them relayed by Stalin along with request for Chinese intervention— warning that North Korea was on the verge of collapse, Mao called the Politburo into session on October 1. Some have claimed that this was supposed to rubber-stamp his decision to enter the war, but the evidence seems to show a considerable disagreement among the leaders, and a lot

[34] Lieutenant General J. Lawton Collins, Truman Library Institute conference comment, May 1975. Cited in Heller (1997).

of discussion of the pros and cons of intervention (Goncharov, Lewis and Litai 1993, 176-80).[35]

There were many good reasons why the Chinese should have hesitated. The economy, ravaged by years of civil war, was in shambles, and the army had released nearly half its manpower back in April when the initial stages of the conversion to civilian economy were getting under way. There was war weariness, internal banditry, and "unliberated" islands where resistance was still irksome. Most of the remaining troops were concentrated in the South, and were unprepared for winter operations (Harding and Yuan 1989, 189-214). A ruinous war with America would certainly delay the reconstruction plans and cause great consternation to the people (Schaller 2002). Going to war with the United States in Korea would further divert the Party from its cherished goals of liberating Taiwan and assuming control of Tibet. Finally, given the precarious economic and military situation, it would likely make China even more dependent on Soviet aid, thereby exposing it to Moscow's influence and meddling. This war was not welcome (Meisner 1999, p. 69).

On the other hand, failure to intervene could be even worse (Christensen 1992). It was becoming clear that without immediate assistance, the North Korean regime was doomed. Kim was already reverting to his pre-rule days and talking of abandoning the war for guerilla struggle in the mountains. Total defeat of DPRK was unacceptable as it would establish a permanent hostile presence that would "put a lasting lien on Chinese power an could eventually cripple it" (Goncharov, Lewis and Litai 1993, 184). Maintaining an extensive force across the thousand kilometers of the Yalu to deter further aggression against China would simply be ruinously expensive (Chen 1989). This would not only strain the economy but possibly put the major industrial centers in the Northeast in jeopardy. Whiting (1960, 152) argues that this was not the primary factor. But that was not all, for U.S. presence would forestall the liberation of Taiwan (as the Seventh Fleet was now doing in the straits), and would breathe new life into Chiang's Nationalists, undermining Communist rule on the mainland (Pollack 1989, 214).

The Party feared losing popular support. Demonstrating fear would encourage the counter-revolution. Disturbances were already breaking out in anticipation of American invasion across the Yalu. Why would anyone think that the U.S. would not stop at the border? After all, Truman and the entire administration consistently signaled that they had no designs there, despite MacArthur's occasional inflammatory rhetoric. For example, when the General, whose Asia-first pro-Chiang sympathies were widely known, visited Taiwan in July, Chiang publicly alluded to joint operations with the U.S. in defense of Formosa. Washington quickly disavowed this, going as far as to force MacArthur to issue a written repudiation. As Pollack (1989, p. 231) notes, there was no desire in Washington to fight China in China.[36]

[35]It is at this point that Mao supposedly cabled Stalin on October 2 telling him that China would surely intervene, indicating that the meeting was indeed largely symbolic. As explained below, the October 2 telegram in the Chinese archives is not what Stalin actually saw, as discovered recently by the version in the Russian archives. See Shen (1996) for more on the controversy.

[36]There were many concerted attempts to convey this to the Chinese. The August 28 press release noting Truman's order that MacArthur withdraw his statement on the subject emphasized that "there can be only one voice in stating the position of the United States in the field of foreign relations;" that of the President. The press release unequivocally stated that the purpose of the Seventh Fleet was "to prevent an attack on Formosa" but that this did not mean America was taking sides, "that the determination of the future status of Formosa

So why would the Communists fear further American aggression? There is no question that they did: on October 24, Zhou complained that first China was promised that U.N. troops would not cross the 38th parallel, but then was informed that despite the crossing, would stop at the Yalu (Chen 1989, 189). This was just another in a long series of broken promises. One particularly aggravating lie was Truman's January pledge that the U.S. would steer clear of the Communists' dispute with Taiwan. The about-face came two days after the outbreak of the war when Truman ordered the Seventh Fleet into the Taiwan straits to "neutralize" the area while military operations continued on the Korean peninsula (Wang 1989, 201). Given that Mao was planning an invasion, this was a wise decision, but the Chinese interpreted it as America siding with Chiang (Gaddis 1989, 163). Why did the U.S. respond so quickly and strongly in Korea? Why did it change its Formosa policy? Mao must have asked these question, coming to the conclusion that the "real U.S. aim was to threaten China itself" (Goncharov, Lewis and Litai 1993, 159). As late as October 28, Mao warned that the U.S. actions in the Taiwan straits were tantamount to war. Ironically, when MacArhtur wrote to Truman about his June 27 dispatch of the fleet, the General sarcastically claimed to understand his decision "to protect the Communist mainland" (Kaufman 1997, 46). It is then not surprising that Zhou professed a belief that the U.S. might continue to advance beyond the Yalu.

In the end, opting to stay out of the war seemed to expose China to a three-pronged attack by the Americans and their "lackeys", who seemed to be simultaneously closing in from Korea, Taiwan, and Indochina (where the U.S. had recently committed to aid the French). The Party could not sit idly by as their recent achievement was being so obviously threatened. Inaction would be worse than destruction for, as Peng Dehuai said, even "if China is devastated in war, it only means that the Liberation War will last a few years longer."[37]

But it was not just the costs of not intervening that egged the Chinese leadership on; attack also had its positive side. If the Chinese believed that the U.S. was likely to strike beyond the Yalu, then attacking its forces in North Korea would bog down the Americans, saving China itself from aggression (Pollack 1989, 222). Seizing the initiative and exploiting the advantages of topography and short logistical lines were also in accordance with Mao's tactics and time-honored Chinese principles of warfare (Chen 1989, 189-91). The support of the population "inspired" by Party propaganda and the forthcoming Soviet military assistance would make fighting all the more bearable, perhaps even making victory probable. Mao's revolutionary world view was also a strong impetus for he seems to have believed that military victory was possible, that the U.S. would not negotiate without suffering a serious setback first, and that all this would be advantageous to the "revolutionary front" of the world (Sheng 1995).[38] Right after Inchon, Mao wrote that "apparently, it won't

must await the restoration of security in the Pacific," that "the present military action is without prejudice to the political questions affecting that island," and that the Americans desired "that these political questions be settled by peaceful means." Of course, words are cheap, and from Chinese perspective, American actions must have appeared to contradict these pledges almost completely. (Text of the press release in the Truman Library, available online at http://www.trumanlibrary.org/whistlestop/study_collections/korea/large/sec3/mac_8_1.htm. Accessed September 20, 2004.)

[37] Cited in Chen (1989, p. 191).

[38] See also Chen (1994) for a somewhat controversial emphasis on these revolutionary motivations over the

do for us not to intervene in the war."[39]

But why, then, wait until mid-October? There is evidence that an earlier intervention, perhaps as late as a week after Inchon, could have deterred the U.S. from invading North Korea. For example, during the Wake Island conference, Truman asked MacArthur point-blank about the chances of Soviet or Chinese intervention. The General replied that they were very little:

> Had they interfered in the first or second months it would have been decisive. We are no longer fearful of their intervention... Now that we have bases for our Air Force in Korea, if the Chinese tried to get down to Pyongyang there would be the greatest slaughter.

Paul Nitze commented in 1954 that:

> There is one point, though, that is important. And that is the point that prior to crossing the 38th Parallel we felt that if the Russians really took this Suslov position seriously they had an option as to what they could do and that is to move their own forces or Chinese forces overtly down to the 38th Parallel prior to the time we got there. And this would make it pretty clear they were committing their prestige to the 38th Parallel; then we could make a deal. Then we could call this thing off, because then they would have taken responsibility up to their place and we would have taken it up to ours, and this would have given you an adequate solution.

The instructions the cabinet sent to MacArthur seem to bear out these sentiments: China could have intervened earlier, and that would have stopped the U.S. from crossing the 38th parallel. So why did China do no such thing?

China's entry seems dictated by circumstances rather than grand strategic design. In June, no intervention was contemplated because North Korea was expected to win. China was not even unduly worried about American presence in South Korea, and its priority had been Taiwan. By late July, however, the Chinese developed serious misgivings about Kim's prospects for success, and from August, they put earnest contingency planning in motion (Goncharov, Lewis and Litai 1993, 165). Since the war was threatening to turn into a protracted affair, Kim's exposed rear was vulnerable, and Chinese entry could become a necessity. Still, Mao seems to have placed some faith in the deterrent value of the Sino-Soviet Treaty he had signed with Stalin in February (and which Acheson had bitterly denounced in March). Consequently, no major troop movements to the Northeast began until September, and not until after Inchon did China begin switching to a more belligerent stance. The rout of the DPRK army had suddenly exposed northern Korea to U.N. conquest, but the time to prevent this by openly entering the country was gone in a matter of days.

On October 2, Mao was ready to respond to Stalin's urgent cable from the previous day, asking China 'to move to the 38th parallel at least 5-6 divisions" to give the Korean communists some breathing space, that "we have decided to send some of our troops to

more traditional security concerns. The argument that Mao was spoiling for a fight all along seems to me rather far-fetched.

[39] Cited in Goncharov, Lewis and Litai (1993, p. 174).

Korea under the name of [Chinese People's] Volunteers to fight the United States and its lackey Syngman Rhee and to aid our Korean comrades."[40] He had drafted the text but once deliberations began, it became obvious that there was considerable disagreement among the leadership about the wisdom of such entry. Consequently, Mao verbally instructed Roshchin to convey to Stalin this fact, along with where the decision appeared to stand at the time: no Chinese intervention was forthcoming:

> We originally planned to move several volunteer divisions to North Korea to render assistance to the Korean comrades when the enemy advanced north of the 39th parallel. However, having though this over thoroughly, we now consider that such actions may entail extremely serious consequences... Many comrades in the CC CPS [Central Committee of the Communist Party of China] judge that it is necessary to show caution here... Therefore it is better to show patience now, refrain from advancing troops, [and] actively prepare our forces, which will be more advantageous at the time of war with the enemy. Korea, while temporarily suffering defeat, will change the form of the struggle to partisan war.[41]

The internal debates continued for several crucial days. Even though Zhou sent Washington a warning through Indian Ambassador Panikkar, the U.S. forces thrust across the 38th parallel on the 7th, making war inevitable.[42] On the next day, while Truman was conferring with MacArthur at Wake Island, Mao issued the mobilization directive, and informed Kim that China was entering the war (Goncharov, Lewis and Litai 1993, p. 184-90). But on the 11th, Zhou Enlai cabled troubling news from Moscow: even though Stalin had agreed to assist China within certain limits during a meeting on the previous day, Molotov had just called: "we do not agree with the decision to send in your troops, and we also will not offer you military equipment." On the 12th, Stalin cabled Kim that China had reneged and that he would have to evacuate Korea, showing that the Russian did not know that China

[40] Full text of telegram is in Goncharov, Lewis and Litai (1993), document #63 in the appendix, pp. 275-76.

[41] The text of the this cable, recently discovered in the Russian archives, is in Mansourov (1995), document #12. Mao have several reasons for this—popular dissatisfaction, low probability of defeating the Americans, need for peaceful reconstruction—and then raised the specter of Soviet involvement. The discrepancy between the Chinese version that has been widely available for years and that has formed the basis of most recent account of China's decision to intervene, and the version in the Russian archives is important. The Chinese version seems to indicate nearly complete independence from Moscow, while the Russian version leads in the opposite direction (that Mao only decided after Stalin pressured him). It now appears that Mao, having drafted the Chinese version, never actually sent it to Stalin: that would be odd indeed given that the Chinese had not, in fact, resolved to attack at the time. When the lack of unanimity emerged at the meeting, Mao had Roschin convey to Stalin the truth, but since this was done verbally, there is no cable to that effect in the Chinese archives. This version of events accounts for the discrepancy and, moreover, puts Zhou's visit to Stalin in a different light. Zhou told Stalin on October 10th that China would not intervene at all. Now this would be rather bizarre if Mao had told Stalin the exact opposite just a week ago, but it would be in character if what Stalin knew was what Roschin told him. That Stalin did not contradict Zhou pointing out the discrepancy also seems to show that no such discrepancy existed for the Russian. Instead, Stalin argued why China should intervene. Sending Zhou to meet with the Russians is also consistent with some vacillation on China's part, a last attempt to secure much needed Soviet aid, especially air cover. Stalin's October 1 telegram was also consistent with his policy of relinquishing responsibility for Kim's failure to the Chinese, as he had done before.

[42] The JCS sent a directive to MacArthur on the 9th amplifying the September 27 directive, and authorizing fight against China at his discretion of military victory.

truly had resolved to enter the war. As soon as he learned about Stalin's going back on his promise, Mao informed Gao that Soviet air support was not forthcoming (without telling him the reason), and withdrew for seventy hours to mull over his options.[43] On the next day the Politburo postponed its October 9 order for CPV to enter Korea, but on the 13th, Mao finally concluded that since U.S. would probably not stop at the Yalu, China would have to intervene anyway. At this point, Zhou finally secured Stalin's guarantee that Soviet assistance would, in fact, come but with the proviso that China entered the war first. On the 16th, the Chinese crossed the river without Russian air cover, which did not come until November, and whose absence allowed the U.S. air force to inflict devastating losses on the CPV. It appears then that China's intervention was not foreordained, but the very conditions that made it necessary also ensured that the Americans would not be deterred by China entering without overt Soviet support.

7.6 The Soviet Role in the Intervention

This is not the place to discuss the devious and exceedingly intricate maneuvering between Mao, Stalin, and Kim with respect to the Korean War. Still, Soviet intent may not be difficult to grasp in aggregate, even as it remains infuriatingly elusive in detail. Stalin seems to have feared that too large an involvement in Korea might embroil the USSR into a general war with America (Pollack 1989, p. 224). This was something he clearly did not want, and so he directed Kim to consult with Mao when the Korean leader visited Moscow secretly between March 30 and April 25. Of course, Stalin had also promised Mao his support for the invasion of Taiwan, so perhaps he expected that Mao would not want to share the limited resources (Goncharov, Lewis and Litai 1993, p. 146). At any rate, he did not want to refuse Kim, so he pushed him to Mao, hoping perhaps that this would do the trick. It did not, of course, because Kim was nobody's pawn, and Korea was a civil war waged for unification by Koreans on both sides of the 38th parallel, and not, as it is often portrayed, a superpower confrontation by proxy. While Kim relied on Soviet and Chinese assistance, he was no more controlled by Moscow or Beijing than Rhee was controlled from Washington.[44]

Once the war erupted, Stalin seems to have tried to ensure that the provisions of the Sino-Soviet treaty would not be activated. Since Article I obliged the Soviet Union to "immediately render military and other assistance with all means at its disposal" should China find itself at war with the U.S., this meant pursuing policies that would minimize the chances of that happening. Hence the otherwise puzzling failure to veto the U.N. resolutions branding North Korea as the aggressor: if U.S. forces were under United Nations command, they would be less likely to declare war on China.[45] Unlike Mao, Stalin seems to have been

[43] See Goncharov, Lewis and Litai (1993), p. 190 for the Molotov quote, and p. 280 for the telegram to Gao.

[44] Bajanov (1995) claims that Stalin was firmly in control, setting even the date for the invasion, and that he pressured the reluctant Chinese into entering the war to save the Pyongyang regime. One evidence for this is Mao's October 2 telegram as recorded in the Russian archives, but, as we have already seen, things were not that simple. It does not appear that Mao was unduly influenced by Stalin. China entered the war mostly for national security reasons. There is no reason to suspect that Kim was an ideological pawn in Moscow's hands either, especially given Stalin's professed aversion to a war in the far east, a war that could potentially drag the USSR into conflict with the United States.

[45] The U.S. was indeed somewhat restrained by the need to clear activities with the U.N. That is why Marshall asked MacArthur to cross the 38th as a matter of military necessity, so as not to put the issue to a vote. Not

prepared to accept the collapse on North Korea. As he remarked,

> Let the United States of America be our neighbors in the Far East. They will come there, but we shall not fight them now. We are not ready to fight.[46]

He must have understood that Mao could not let his neighbor disintegrate, so he moved toward a policy that would ensure China's entry in a manner that would be least likely to provoke a declaration of war by the United States. Since he did not want to precipitate a similar declaration by the Chinese, he could not have been too encouraging with his promises for aid. A curious incident occurred during Zhou Enlai's visit with Stalin on October 10. Zhou, quite disingenuously, claimed that China was unable to enter the war without Soviet support. Stalin, who must have been informed about the preparations underway, called his bluff and explained the reasons why, while the Soviet Union could not intervene, China had to. He washed his hands of the decision, and when Zhou finally abandoned all pretense and asked for air support, Stalin agreed but placed limits on the operations of the Soviet pilots (Goncharov, Lewis and Litai 1993, pp. 188-90). It was this supposedly final promise that Molotov repudiated on the following day that caused Mao's seventy-hour retreat into contemplation. When Soviet military assistance finally came, the Chinese even had to pay for it.

7.7 A War No Longer Unwanted

The Russians were not about to blunder into a war on the Korean peninsula. Unfortunately, their intervention that was necessary to stop the Americans after Inchon. In the end, once the U.S. moved north of the 38th parallel, China was ready to fight, even if the Rubicon was not crossed until October 13. But the American decision to proceed had been made despite the risk of possible Chinese intervention. After the stunning success of the campaign, the Chinese Communists could not deter the U.S. from continuing if they entered without the Soviets. Since it was precisely the open Soviet support that Stalin wanted to avoid, war with China became inevitable.

"Inevitable" is a strong word but it seems to characterize the situation well. The most compelling evidence comes from the subsequent actions of the two enemies. The first Chinese soldier was captured on the 22nd, but two days later MacArthur ordered the American troops to the Yalu, discounting the mounting evidence of Chinese intervention. It was not until November 6 that the realization of a full-scale Chinese entry finally sunk in. However, on the next day the CPV disengaged and retreated behind prepared positions, ushering a three-week lull in fighting. On the 8th, the JCS informed MacArthur that the previous objective might "have to be reexamined in the light of the Chinese intervention," thir biggest worry being that since China would not have dared intervene alone, a full-scale Soviet invasion had to be coming (Kaufman 1997, p. 63-69). The General insisted on pursuing the existing plan, and the next day the JCS reaffirmed his discretionary powers granted in

much of a restrained, true, but not quite free either. The British were quite active trying to bring a negotiated end to the war, especially during the lull in fighting after the first encounter with the CPV. Neither side was interested (Farrar 1983).

[46]Cited in Goncharov, Lewis and Litai (1993, p. 191).

September and amplified in October. The British attempt to arrange a buffer zone and negotiate some end to the impending war failed due to marked lack of interest in a deal on either side (Farrar 1983). Neither the Americans, nor the Chinese (who had withdrawn to lure the U.N. troops into the trap that the General finally led them into) wanted to talk, both wanted to fight. When MacArthur launched his "home by Christmas" attack on the 24th, his offensive met the Chinese offensive, as the General described the Chinese counterattack that came two days later smashing his forces.

So it wasn't that America tossed caution to the wind or that China failed in its warnings. The successful expulsion of DPRK from the South coupled with MacArthur's victory suddenly made the U.S. much stronger, and its improved military position opened up new possibilities. Encouraged by apparent Chinese timidity, the U.S. simply pursued its avowed goal of Korean unification, and only an outright Soviet threat could have halted it. But the very amelioration of the American plight spurred China into intervening, something it did not seem to have wanted to do, and perhaps would have not done had the U.S. stopped at the 38th parallel. Indeed, it was precisely this reluctance to enter sooner that the Americans interpreted as lack of capability, which in turn, goaded them into expanding their war aims. The tactical success of Inchon created an environment in which war between China and America in Korea became inevitable. It was a war that neither one had wanted a month ago, but that both were fully prepared to fight now.

8 Conclusion

Verbal threats to use force are neither inherently costly nor do they improve one's chances should war break out. In militarized bargaining, however, threats are implicit in the crisis behavior where actual costs are incurred in activities that could contribute to the success of the military campaign if fighting breaks out. Hence, military actions can sink costs and tie hands at the same time. I argued that most existing theories of crisis bargaining neglect this dual effect, and consequently their conclusions need to be modified, some substantially, others more subtly. Many empirical hypotheses can be drawn from the preceding analysis. In lieu of summarizing these again, I offer one interesting implication of the overall results.

Fearon (1994, p. 71) argues that "a unitary rational actor question (how can states credibly signal their foreign policy intentions despite incentives to misrepresent?) proves to require an answer with a nonunitary conception of the state." This claim is correct if one assumes that military measures involve only sunk costs. However, such an assumption is difficult to sustain on empirical grounds, and I have shown that once it is relaxed, unitary actors do recover their signaling abilities, along with equilibrium possibility for bluffing. Therefore, there is no *a priori* reason to believe that domestic politics are necessary to explain crisis bargaining.[47]

If actors are capable of signaling foreign policy through military means, the relative importance of audience cost and other domestic politics mechanisms becomes an open question. In particular, even if such mechanisms operate differently across regime types, there is no reason to expect that they would translate into crisis behavior that would itself depend on

[47] This, of course, is not to say that domestic politics are irrelevant, not even that they are relatively unimportant. This is simply a claim about whether it is possible for unitary actors to signal foreign policy preferences.

regime type. For example, even if democracies are able to generate higher audience costs than autocracies (Fearon 1994), or even if domestic political contestation enables them to reveal more information than autocracies (Schultz 2001*a*), it does not necessarily follow that democracies would be able to signal their resolve any better in a crisis in which military means are available to autocracies as well. One immediate consequence is that unless they specify why autocracies forego these signaling possibilities, theories that explain the democratic peace on signaling grounds face a serious difficulty.

Of course, the model also demonstrates that mobilization serves as an implicit threat, and its role as a purely signaling device to warn the opponent of the dangers of escalation may be quite limited. Military coercion can be exceptionally dangerous business because it alters the strategic environment, and may change it to such an extent that war becomes a necessity. Empirically, then, it may not be clear whether mobilization is a warning or a preparatory step to war, a fact that helps explain why it is regarded nervously by crisis participants.

A Appendix

This demonstrates the calculations for the subgame perfect equilibrium result discussed in Section 6.5. With complete information, S_2 would never mobilize in equilibrium unless she is certain to attack if resisted. The choice then would be among fighting S_1, compelling him, or quitting—bluffing is not an option. S_1 will capitulate if $W_1^d(m_1, m_2) \leq -m_1$, or when

$$m_2 \geq \frac{m_1}{\lambda}\left(\frac{v_1}{c_1} - 1\right) \approx 2.02 \cdot m_1.$$

Hence, if S_2 gets S_1 to capitulate, her payoff would be $EU_2^C(m_1) = 0.5 - 2.02m_1$. If S_2 allocates $m_2 < \overline{m}_2(m_1)$, then fighting is certain if S_1 has allocated m_1. The best S_2 could obtain from fighting is:

$$EU_2^W(m_1) = W_2^a(m_1, m_2^*(m_1)) \approx 0.49 + 1.01m_1 - 1.42\sqrt{m1}$$

Since S_2 would prefer fighting to compelling whenever: $m_1 \geq 0.226582$. Since S_2 can always obtain $EU_2^Q(m_1) = 0$ by quitting immediately, she would prefer compelling to quitting whenever $EU_2^C(m_1) \geq 0$, or whenever $m_1 \leq 0.2475$. Similarly, S_2 would prefer fighting to quitting whenever $EU_2^W(m_1) \geq 0$, or whenever $m_1 \leq 0.364893$. Putting these results together, we obtain the following:

- $m_1 < 0.23 : EU_2^C > EU_2^W > EU_2^Q \Rightarrow S_2$ compels S_1 to quit;
- $0.23 \leq m_1 < 0.25 : EU_2^W > EU_2^C > EU_2^Q \Rightarrow S_2$ fights optimally;
- $0.25 \leq m_1 < 0.37 : EU_2^W > EU_2^Q > EU_2^C \Rightarrow S_2$ fights optimally;
- $m_1 \geq 0.37 : EU_2^Q > EU_2^W > EU_2^C \Rightarrow S_2$ quits.

This now gives us the subgame perfect solution to the continuation game as a function of S_1's initial choice. It is obvious that in equilibrium he will never allocate $m_1 < 0.23$, because he will have to capitulate for sure, and any such positive allocation is just a cost.

Similarly, he would never allocate more than $m_1 = 0.37$ because S_2 is certain to quit for all such values, and so he would be paying more unnecessarily. Hence, S_1's choice boils down to $m_1 = 0.37$, which would lead to S_2's capitulation, or some $m_1 \in [.23, .37)$ that would lead to certain fighting.

If S_1 allocates the assured deterrence level, his payoff is $0.60 - 0.37 = 0.23 > 0$, so in equilibrium S_1 would never quit immediately. What would he get if he allocates less than that and fights? For any such allocation, S_2 responds with her optimal fighting allocation $m_2^*(m_1)$, and so S_1's best possible fighting payoff is:

$$\max_{m_1} \left\{ W_1^d(m_1, m_2^*(m_1)) \right\} = \max_{m_1} \left\{ \frac{v_1}{v_2} \sqrt{\frac{m_1 v_2}{\lambda}} - c_1 - m_1 \right\}.$$

Taking the derivative and setting it equal to zero yields:

$$v_1 = 2\lambda \sqrt{\frac{m_1 v_2}{\lambda}} \Leftrightarrow m_1^* \approx 0.18.$$

This means that the best S_1 can do if he is going to fight would be to allocate $m_1^* = 0.18$, in which case his expected payoff would be -0.02, that is, worse than quitting immediately. Of course, we know that for any $m_1 < 0.23$, no fighting will actually occur because S_2 would allocate at the assured compellence level, and so using $m_1 = 0.18$ yields S_1 an expected payoff of -0.18, even worse.

Therefore, optimal fighting is strictly worse than immediate quitting for S_1, but quitting is strictly worse than deterrence. This means that in the subgame perfect equilibrium, S_1 would allocate $m_1 = 0.37$, and S_2 would capitulate immediately. War never occurs with complete information between the adversaries with valuations $v_1 = 0.6$ and $v_2 = 0.5$.

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