

**The Principle of Convergence
in
Wartime Negotiations**

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“War’s very objective is victory—not prolonged indecision. In war there is no substitute for victory.”

General Douglas MacArthur

War as Instrument of Policy: Two Perspectives

- war as bargaining failure:
 - war ends bargaining (and game)
 - war is a costly lottery over outcomes
 - war aims fixed for duration
- Puzzle: mutual optimism
- war as information transmission:
 - war continues with bargaining
 - war is a costly stochastic process
 - war aims endogenous
 - info revealed strategically and otherwise

What is war? Few would claim that war is “untrammelled manifestation of violence.” Most would agree that war is a means toward some (political) end. The causes of war are thus reasons why clinching a political objective by force was deemed necessary or desirable despite the costs and risks involved.

The literature on the causes of war is enormous, and the formal treatment is also well-developed. However, the formal part suffers from a serious omission (also shared in many ways by traditional literature). If war is means toward an end, one would expect to see studies of how costly and risky fighting actually advances the goals of the parties engaged in it. In other words, one would expect to see studies concerned with termination of wars, the factors that influence political settlements, and the timing of their conclusion.

A promising venue for formal inquiry was the conceptualization of war as a bargaining failure. The puzzle it examines is: Since war is costly and risky, and inefficient after the fact, why can't states negotiate a mutually acceptable bargain prior to engaging in inefficient fighting.

Blainey's puzzle is standard: rational explanation requires both sides believe in victory: they both demand too much, no bargaining range exists. How can be optimistic at the same time?

The explanation is that the risk of fighting comes from incentives states have to lie about privately known parameters, such as capabilities and resolve, during crisis negotiations. Because states have strategic incentives to bluff about their (privately known) capabilities, crisis negotiations can end with one state starting a war. The occurrence of war is thus the probability of such breakdown.

This assumes war aims are exogenously fixed, and war is a costly lottery over military outcomes. That is, war aims (demands that states make of each other) cannot change while the war is being fought; and war is a list of probabilities associated with military victory and defeat that enables rational calculation of its expected outcome.

War is not an outcome, but a process. Today, I discuss results that are based on a formal model that incorporates diplomacy and fighting as two simultaneous processes that can affect each other.

War aims are endogenous to that process. That is, states can and do adjust their demands conditional on their performance in the war.

Instead of the coercive use of force, I concentrate on the informational use.

This transmission can be strategic and nonstrategic, with the former being more precise than the latter.

What is War?

War is a result of strategic behavior of opponents trying to balance the trade off between possible political gains and costs/risk associated with more fighting.

War is not bargaining failure resulting from private information with incentives to misrepresent it and it is not the risk of collapse of pre-war negotiations.

War results when players engage in strategic signaling and screening. It is thus a consequence of private information with incentives to keep acquiring information in a costly way until expectations converge.

War is transmission of information.

Sketch of Central Findings: War as Information Transmission

- war when states try to influence expectations
- bargain possible when war loses info content
- demands conditioned on expectations based on
 - revealed information about opponent
 - relative military success on battlefield
- victories encourage delays but do not offset the incentive to end war
- belief in victory is not necessary to fight
- shadow of the future encourages costly delay

War occurs when states attempt to influence each other's expectations in an environment of asymmetric information. That is, states attempt to find out how strong their opponent is while demonstrating their strength.

When war loses informational content (that is, when expectations of both sides converge), a bargain becomes possible. Thus, military victory is not necessary. This is contra MacArthur and the current Powell Doctrine of preponderance of power.

War aims conditional on what states have learned about each other and where the fighting has taken them. Thus, even when one realizes the opponent is stronger than previously thought, the bargain will be different depending on the military advantage at the time it is struck.

Since intermediate victories encourage optimism, they are conducive to delay. In fact, given the same information about an opponent, states may prefer to end the fighting following a defeat instead of continuing. However, this incentive does not override the primary concern which is to end the war as soon as sufficient knowledge is obtained about the opponent to secure the political objectives.

Most importantly, we shall see that belief in victory is not necessary to induce a state to fight. Also, belief in military defeat is not necessary to induce it to settle. The standard puzzle may have been too difficult a hurdle to overcome by explanations.

The shadow of the future is commonly seen as good because it makes cooperation possible (recall repeated PD results). However, here it provides incentives to engage in screening/signaling, and is thus conducive to conflict.

The Model: Overview

Negotiations

- two players use alternating-offers protocol
- two-way division of political benefits

Warfare

- costly battles for objects without intrinsic value
- continues while disagreement or no total victory

Information

- uncertainty about probability of winning battles
- strategic and involuntary revelation

The Model: Negotiations

- Players 1 & 2 bargain over benefits of size $\pi > 0$
- Status Quo distribution: $s_1 + s_2 = \pi$
- Offers: $\{(x, y) \in R^2 : x + y = \pi \ \& \ x, y \in [0, \pi]\}$
- Players alternate in discrete time, $t = (0, 1, \dots)$
 - t even: player 1 offers, player 2 accepts/rejects
 - t odd: player 2 offers, player 1 accepts/rejects
- Following rejection, a costly battle is fought
- Process continues until some player accepts an offer or collapses militarily
- Common discount factor: $\delta \in (0, 1)$

The Model: Warfare

- Warfare is stochastic process of attrition
- There are $N \geq 2$ military objectives (N finite)
- Following rejection a costly battle is fought
 - Player 1 wins with prob. p and loses with $1 - p$
 - k_t is the total number of objectives controlled by player 1 at time t
 - Victory gains an objective: $k_{t+1} = k_t + 1$;
Defeat loses an objective: $k_{t+1} = k_t - 1$
 - If $k_t = 0$ (N), player 1 (2) is defeated militarily, and player 2 (1) imposes a settlement
 - Fighting is costly, per-period payoff is $b_i < s_i$

Results: Complete Information

- Large number of Nash equilibria
- Unique stationary no-delay Markov perfect equilibrium (MPE):

Player 1's first state-dependent offer is immediately accepted by player 2, and no fighting occurs.

- Since war is instrumental, stochastic process does not produce inefficiency

The Model: Information Structure

- Player 1 uncertain about distribution of power
- Believes player 2 is:
 - strong, p_L , with probability q^s
 - moderately strong, p_M , with probability q^m
 - weak, p_H , with probability q^w
- Where

$$0 < p_L < p_M < p_H < 1$$
$$q^s + q^m + q^w = 1$$

Results: Asymmetric Information

- Large number of Bayesian Nash equilibria
- Generically unique separating Markov Perfect Sequential equilibrium (MPSE) with credible conjectures when players are sufficiently patient:

Player 1 makes an initial proposal that only weak opponents accept; in the next period, moderately strong opponents make an acceptable counter-offer, but strong ones make an unacceptable one; and in the following period player 1 makes a generous offer accepted by all types.

Results: Intuition

- delay agreement to extract better terms
- uninformed player screens, informed signals
- victories make players more optimistic
- offers depend on accumulated information
- demand expansion offset by risk of fighting

Intuition. Initiator knows it may be facing one of several types of opponents. It prefers to strike deals with all of them, but not on the same terms. With strong opponents, it is ready to concede quite a bit compared to moderately strong ones. On the other hand, it is not willing to give up much if its opponent is weak.

It has several strategies. First, it can simply make an offer generous enough that all three types will accept. Second, it can make an offer that only certain types will accept (which risks war), fight, and then make an acceptable offer. The idea is that since fighting is costly and (for weak types can end in defeats), weaker opponents will settle sooner and on harsher terms than others.

It turns out that since weak types will accept any offer that stronger ones find acceptable, this means that the initiator can start by demanding so much that strong types reject it, while weak ones have incentives to accept. The question then is how much to offer so that weak opponents prefer acceptance to bluffing and pretending to be stronger.

The initiator first figures out what would it take to satisfy a strong opponent after some fighting with it. To this end, it calculates the likely military situation given its current knowledge about the distribution of power. This forms the upper limit on how much the initiator will give up. Then it tries to induce the weaker type (who also makes a similar calculation knowing that the likelihood of reaching a favorable military situation is actually lower for it) to accept a bargain between what it can expect from fighting and the initiator's upper limit.

Similarly, when the opponent gets to make an offer, it can either demand so little that the initiator accepts or can make an unacceptable demand, which will be rejected. The only reason to demand too much is to try to convince the initiator that it is facing a strong opponent.

Under conditions described in the text, the solution is very attractive. The initiator begins by demanding so much that only weak types agree. If the demand is rejected, war begins. On the second round, a moderately strong opponent prefers to strike a bargain by offering acceptable terms to the initiator. Strong types demand too much and their offer is rejected (war continues). Finally, knowing that it is facing a strong opponent, the initiator makes it an acceptable offer.

This result is very similar in spirit to bargaining models in economics (where this dynamic is called a “skimming property”) although here the protocol is not restricted to one-sided offers. On the other hand, its precise terms are complicated by the fact that players must take into account the outcomes of individual battles.

Note that information here is transmitted in three ways: by the offers states make, by the acceptance and rejection decisions, and from the outcomes on the battlefield. While the first two are strategic (in the sense that they are fully controlled by the players), the third is probabilistic. Fighting by itself is a crude way to learn about the opponent. In fact, players can learn more about each other on the bargaining table when they know that in the absence of agreement the battlefield will (imperfectly) reveal their relative strengths anyway.

War aims generally vary with battlefield success and represent a mix of the attempt to determine the type of opponent, send a signal about strength, and the military outcomes observable by both sides. Thus, they (and the outcome) are a combination of mechanisms that have usually been treated quite separately in the formal IR literature.

The conclusion is that while there is some expansion of war aims due to military success, this does not mean the end of the bargaining process because such expansion is always moderated by the desire to shorten the war as much as possible.

On the other hand, military victory is not necessarily what war is all about. Although it is possible for a war to end with complete military defeat in the context of the model, for nearly all values of the parameters wars will end with a negotiated settlement. This corresponds well with historical reality where, with the exception of the Second World War and its uncharacteristic demand for unconditional surrender, wars do not end with the complete obliteration of the losing side.

The principle of convergent expectations states that war will end once it loses its informational content. That is, once beliefs are such that there are no more strategic incentives to delay agreement. In effect, beliefs become irreversible. This is slightly different from what some analysts call “clear military trend” because it does not require that both sides agree on who the eventual victor will be. It does require that they agree on how likely different outcomes are (and this, it is a weaker requirement).

Substantive Implications: War as Process

- Principle of Convergent Expectations
 - warfare not useful once it loses info content
 - not necessary to agree on military outcome (attrition trend), just on relative likelihoods
- Substitute for Victory: belief in military defeat is not necessary to terminate war
- War Initiation: belief in military victory (optimism) is not necessary to start a war

Substantive Implications: Dynamics

- Learning in War from two sources:
 - strategic (manipulable): bargaining table
 - involuntary (non-manipulable): battlefield
- Strategic source reveals more information
- Uncertainty benefits weak, hurts strong
- Shadow of the future encourages fighting

I set out to fill a glaring gap in the formal literature on war by trying to move the mathematical analysis closer to the way practitioners, historians, and politicians view war. I modeled war as two concurrent and mutually interdependent processes: diplomatic negotiations and military conflict. This is a logical extension of the view that war is the pursuit of political objectives through the use of force.

This approach is contrary to two very common definitions of war. Instead of emphasizing military resolution, it emphasizes convergence of expectations, and thus places influencing beliefs to a very prominent position. While this has something in common with recent theories in IR, it departs from them by further claiming that war is not bargaining failure but a logical result of the incentives to uncover information that the opponent may have interests in hiding.

Still, war is not simply bargaining but it is bargaining in the shadow of military conflict. Thus, events on the battlefield influence the demands because they influence the beliefs in addition to the behavior at the negotiating table. War is thus a very complex thing, even in the rather abstract and simple world of this model. Beliefs emerge as crucial determinants of wartime behavior.

Conclusions:
There ARE Substitutes for Victory

- move closer to political definition of war
- war is not bargaining failure or military contest
- war as instrument of policy
- American strategic doctrine?

According to the view I expounded today, war is not about the destruction of the opponent but about persuading it to give up fighting by influencing its expectations.

I should note that even if many findings here appear quite intuitive and unsurprising, they run contrary to much of US strategic doctrine, including the current Powell Doctrine. With the exception of the Marines and their Small Wars Manual, the US has generally viewed war through the prism of military victory. That is, according to the US military, war is about defeating the opponent.

However, the results here suggest that war need not be such an apocalyptic event. In fact, viewing war in these grand terms is perhaps counterproductive because it is a recipe for inaction in places where limited, but determined, application of force can yield satisfactory results on the bargaining table. One need not kill or threaten to kill the opponent to get a good deal.

Since war is about influencing expectations, one should be careful with foreign interventions because each outcome can serve as a signal for the future. Thus, when Clinton withdrew from Somalia, or when the Pentagon is concerned first and foremost with minimizing loss of soldiers (Vietnam syndrome?), the message is that US can be challenged successfully by third-rate powers that can hope to inflict sufficient damage.

Every withdrawal for reasons that can be interpreted as weakness makes the next intervention less likely to succeed because the optimism of the opponent will be correspondingly higher, and a prolonged fighting will be necessary to convince it otherwise.