International Journal of Development and Conflict
10(2020) 105–115

THE CARROT AND STICK APPROACH TO COERCIVE DIPLOMACY

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Threats and promises lie at the heart of many interstate relationships. While the conditions under which threats are more or less likely to be successful have been extensively analyzed game theoretically, their interaction with promises is less well understood. In this essay I take the first step toward a deeper understanding of the dynamic interplay of these critical components of diplomatic exchange by examining a general game model called the *Carrot and Stick Game*. This game, which explicitly models one of several strategies of *coercive diplomacy* identified by Alexander George, is a two-person non-cooperative game that involves a *Manipulator* and its *Target*. There are four distinct types of Manipulators and four distinct types of Targets. Manipulator may or may not honor its promise or execute its threat. Depending on its preferences and beliefs about Manipulator's type, Target may or may not resist Manipulator's demand.

Under complete information there are certain conditions under which a credible promise or a credible threat, used in isolation, is an inadequate crisis bargaining mechanism. As George (1991) recognizes, coercive diplomacy sometimes does not work. But when used in tandem, they are *always* successful, at least from the manipulating player's point of view. Deterrence, therefore, may fail even when a target's deterrent threat is credible, suggesting, once again, that contentious interstate relationships are, at once, both complex and extremely sensitive to the underlying strategic milieu.

The Carrot and Stick Approach to Coercive Diplomacy

Threats and promises lie at the heart of many interstate relationships. To be sure, when used in tandem, they are part and parcel of dealings between political adversaries. In April 2018, for example, after the United States threatened to impose tariffs on $150 billion in Chinese imports, Beijing responded by (1) slapping anti-dumping duties on imports of US sorghum and, at the same time, (2) promising to open up the Chinese automobile market to foreign car makers. But threats and promises almost certainly condition the interactions of allies as well as other less contentious dyads. The relationship of the United States and Israel during the Obama administration is an instructive case in point. The (sometimes executed) threat to withhold diplomatic support by the United States was frequently accompanied by a (delivered) promise of tangible military assistance to Israel.

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The conditions under which threats are more or less likely to be successful have been extensively analyzed game theoretically (e.g., Zagare and Kilgour, 2000), but their interaction with promises is less well understood (Davis, 2000).[1] In this essay I take the first step toward a deeper understanding of the dynamic interplay of these two critical components of diplomatic exchange by examining a general game model called the *Carrot and Stick Game*.

The Carrot and Stick Game explicitly models one of several strategies of *coercive diplomacy* identified by Alexander George.[2] For George (1991: 5), coercive diplomacy involves "efforts to persuade an opponent to stop and/or undo an action he is already embarked on." In George's view, coercive diplomacy is a strictly defensive tactic distinguished from both "blackmail" (Ellsberg, 1959), which he saw as an offensive bargaining tool, and from Schelling's (1960, 1966) related concept of "compellence," which George claims was compatible with either an offensive or defensive action. Thus, George (1991:5) uses the term to highlight "the possibility of a more flexible diplomacy that can employ non-coercive persuasion and accommodation as well as coercive threats."

George's concept of coercive diplomacy, a borderline oxymoron, is at once more specific and more inclusive than either of the two terms he eschews. As such, both deterrent relationships based on blackmail, and compellent relationships rooted in military force, can be seen as special cases of a broader category that George sought to better understand. When promises are not included as part of a bargaining strategy, deterrent and/or compellent threats become the default. As will be seen, the Carrot and Stick Game takes into account both of these default conditions as well as the specific case in which the credibility of promises is strategically salient. In other words, the scope of the Carrot and Stick Game is wider than that of more mainstream crisis bargaining models "à la Thomas Schelling" (Trachtenberg, 1985: 162) and other manipulative bargaining theorists (Young, 1975).

1. The Carrot and Stick Game

Figure 1 summarizes, both verbally and symbolically, the critical components of the Carrot and Stick Game, i.e., the players, their choices, and the likely consequences (i.e., the outcomes) of the various choices, contingent or otherwise. As Figure 1 shows, there are two players in the game, a *Manipulator* and its *Target*. Manipulator begins play (at decision node 1) by deciding whether to initiate a crisis. If it makes no demand of Target, the game ends before it begins, a non-event occurs, and the outcome is *Status Quo*. But a demand for a change in the Status Quo presents Target with a difficult decision (at node 2): whether to Comply or Resist the demand.[3]

[1.] For an early review of the experimental literature, see Tedeschi (1970).

[2.] The classic ultimatum, the "tacit" ultimatum, the "try-and-see" approach, and the "gradual turning of the screw" are the other coercive bargaining strategies George identifies.

[3.] This is precisely the choice that faced European leaders in June 2018 after the United States imposed tariffs on steel and aluminum imports. They could choose to retaliate (resist) by responding tit-for-tat with its own tariffs or, as the German minister for economic affairs, Peter Altmaier, suggested, comply, by doing nothing and accepting the American quotas on its steel exports as the cost of doing business with the United States (Goodman, 2018).

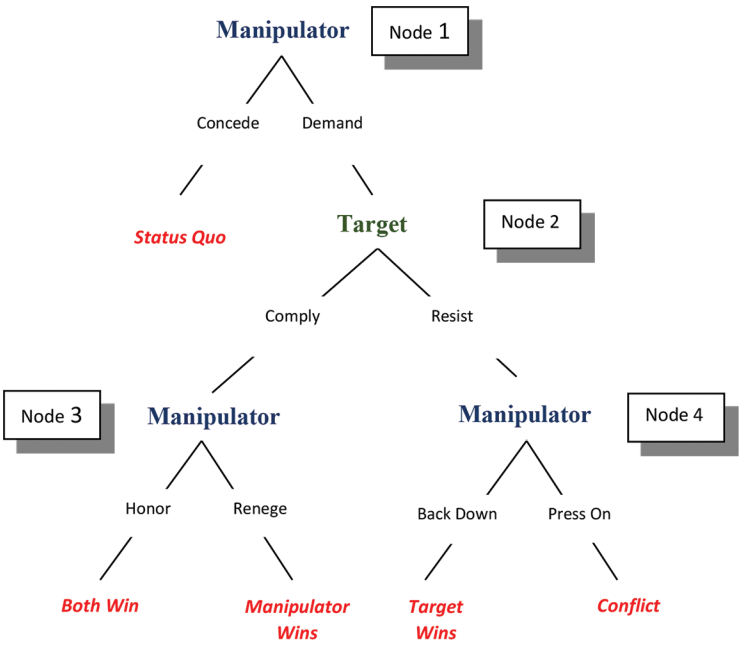


Figure 1: Carrot and Stick Game

It is not necessary to be specific about the nature of Manipulator's demand. It could be a call to either stop or reverse a course of action currently underway, as George suggests, or it could simply be a seemingly polite request to modify a long-established policy. Theoretically, there is no discernable difference between the defensive type of demand that George focus on and the more offensive demand George ascribes to deterrent and compellent threats, at least within the confines of the Carrot and Stick model of crisis bargaining.

Target's decision at node 2 is difficult for two reasons. Not only are the consequences of either choice starkly different, but they are also uncertain. In other words, the outcome of the game depends not only on Target's choice at node 2, but on Manipulator's choice at node 3 or 4. To make resistance less likely, Manipulator promises to reward compliance (at node 3); and to make compliance more likely, it threatens to punish non-compliance (at node 4). Manipulator, however, may or may not honor its promise or execute its threat.

If Target complies and Manipulator honors its promise at node 3, the outcome is *Both Win*.[4] According to George (1993: Ch. 3), it was President Kennedy's public promise not to invade Cuba and his private assurance that US controlled missiles in Turkey would eventually be removed that brought about the compromise that resolved the Cuban missile crisis in 1962.[5] But *Manipulator Wins* (and Target loses) if it does not, as was the case in

[4.] The nomenclature may be misleading. It should not be interpreted to mean that Target necessarily prefers this outcome to the *Status Quo*. But as Schelling (1966:4) notes "Coercion by threat of damage … requires that our interests and our opponent's not be absolutely opposed. … Coercion requires finding a bargain, arranging for [the opponent] to be better off doing what we want—worse off not doing what we want." It is in this sense that *Both Win* when a promise is kept. This outcome could, alternatively, be labeled *Compromise*.

[5.] George (1993: 11, 35) interpreted Kennedy's bargaining strategy during the crisis as an empirical manifestation of the carrot and stick approach to coercive diplomacy.

1939 when Hitler absorbed what remained of Czechoslovakia after promising not to do so a year earlier in Munich (Rock, 2000).

On the other hand, if Target resists the demand, *Conflict* occurs if Manipulator presses on and executes its threat. Slobodan Milosevic found this out the hard way in 1999 when NATO forces carried out its threat to bomb Serbia, as did Saddam Hussein in 1991 and again in 2001. *Target Wins*, however, if and when Manipulator backs down. The Moroccan crisis of 1905 – 1906 is a good example. Because the British and French stood together at an international conference held in Algeciras, Spain, in 1906, Germany was forced to drop its demands for a larger say in Moroccan political and economic affairs. Instead, in a major diplomatic defeat, it accepted a few face-saving concessions that ended the crisis.

2. Preferences

A game is defined by both the rules that govern play and the players' preferences over the set of possible outcomes. The game tree of Figure 1 succinctly captures almost all the rules associated with the model, including the identification of the players, the choices available to them at every decision point, the sequence of play, and the set of outcomes that their choices can bring about. What remains to be specified, then, before a game is completely defined are the assumptions about the players' preferences and what the players know about each other's preferences. Different preference and information assumptions imply distinctly different games.

Since there are two players and five outcomes in the Carrot and Stick Game model, there are many different preference combinations, or distinct games, that can be associated with it. Of course, not all of these combinations are strategically or theoretically interesting. The preference assumptions arrayed in Table 1, however, are both. They are theoretically interesting because they make salient a common context of crisis bargaining; and they are strategically interesting because different combinations of Manipulator's and Target's preferences have significant implications for the way the game plays out, as will be demonstrated shortly.

The columns of Table 1 list the postulated ranking of the players' preferences over the five outcomes, from best to worst. For example, the assumption is that Target most prefers the *Status Quo*, next-most prefers either *Target Wins* or *Both Win*, and so on. Since it may second most-prefer either of these two outcomes, they are listed in the same cell of Table 1. In other words, no fixed preference assumption is made about Target's relative preference between *Target Wins* and *Both Win*, and similarly for any outcomes contained in the same cell of Table 1 for either player. Manipulator, for instance, could most-prefer *Manipulator Wins* to *Both Win* or the reverse. The players' relative preferences for these paired outcomes are the crucial explanatory variables of the model. Next I justify these preference assumptions, beginning with Manipulator's.

Table 1: Initial Preference Assumptions for Carrot and Stick Game

Manipulator	Target
Manipulator Wins or *Both Win*	*Status Quo*
Status Quo	*Target Wins* or *Both Win*
Conflict or *Target Wins*	*Conflict* or *Manipulator Wins*

2.1. Manipulator's Preferences

The Carrot and Stick Game is both theoretically and strategically trivial unless Manipulator's goal is to change Target's behavior or alter its policy orientation. By definition, then, it prefers outcomes *Manipulator Wins* and *Both Win* to the *Status Quo.*

Less clear, however, is Manipulator's preference between *Manipulator Wins* and *Both Win.* If Manipulator reneges on its promise at node 3, it develops a reputation for being unreliable and incurs a cost (Sartori, 2002, 2005). If the reputational cost is seen as low, it prefers *Manipulator Wins* to *Both Win.* But if it is high, it prefers *Both Win* to *Manipulator Wins.* Thus there are two logical possibilities:

Manipulator Wins > *Both Win* > *Status Quo*
Both Win > *Manipulator Wins* > *Status Quo*

A Manipulator that prefers *Manipulator Wins* to *Both Win* is called *Perfidious*. A Manipulator that prefers *Both Win* to *Manipulator Wins* is called *Honorable.*

In what follows, *Target Wins* and *Conflict* are assumed to be Manipulator's two least-preferred outcomes. The fact that it prefers the *Status Quo* to either of these two outcomes means that Target's implied threat to resist at decision node 2 is capable (Zagare, 1987), that is, if executed the threat will hurt (Schelling, 1966: 7). Were this not the case, Manipulator would always make a demand at node 1 and Target's ability to deter a challenge would be non-existent. Clearly the Carrot and Stick Game provides a much richer theoretical environment when the deck is not clearly stacked against one of the players than when it is.

Manipulator's node 4 decision, which occurs only if Target resists its demand at node 2, is not necessarily straightforward. One option is to press on and precipitate a *Conflict*. Obviously, participation in a *Conflict* is not generally costless. On the other hand, there is also a reputational cost attached to backing down and inducing the outcome *Target Wins*. Depending on these relative costs and the utility it attaches to either outcome, Manipulator may prefer *Conflict* to *Target Wins* or the other way around. A Manipulator that prefers *Conflict* to *Target Wins* is called *Determined.* A Manipulator that prefers *Target Wins* to *Conflict* is called *Reluctant.*

To summarize briefly, our analysis below considers the strategic behavior of four distinct types of Manipulators, contingent upon its relative preference between *Manipulator Wins* and *Both Win*, and between *Conflict* and *Target Wins*. Table 2 lists the particulars.

Table 2: Manipulator's Preference and Type Designations

Manipulator's Preferences	Type
Manipulator Wins > Both Win > Status Quo > Conflict > Target Wins	*Perfidious/Determined*
Manipulator Wins > Both Win > Status Quo > Target Wins > Conflict	*Perfidious/Reluctant*
Both Win > Manipulator Wins > Status Quo > Conflict > Target Wins	*Honorable/Determined*
Both Win > Manipulator Wins > Status Quo > Target Wins > Conflict	*Honorable/Reluctant*

2.2. Target's Preferences:

Target's three most preferred outcomes are *Status Quo*, *Target Wins*, and *Both Win*. Its relative preference between the *Status Quo* relative to *Target Wins* and *Both Win* is strategically unimportant. Regardless of Manipulator's choice at node 1, Target never chooses between the *Status Quo* and these outcomes. So, to simplify the analysis, the assumption will be that for Target:

Status Quo > *Target Wins*, and
Status Quo > *Both Win.*

Less clear, however, is Target's preference between the *Both Win* and *Target Wins*. Some state actors may prefer to humiliate an adversary and force it to back off in a standoff. For example, in 1908, Germany's goal when it precipitated the first Moroccan crisis by demanding an international conference was to expose Great Britain's unreliability as an ally and, thereby, break the Entente Cordiale (Massie, 1991: 363). Others, however, may have the opposite preference, preferring not to embarrass a rival because it believes that doing so would only make matters worse. For example, neither Britain nor France were interested in pursuing what Snyder (1997: 337 – 38) calls a "divide and rule" policy in the years leading up to World War I. Both Sir Edward Grey, Britain's Foreign Secretary, and President Raymond Poincaré of France believed that separating Austria-Hungary from Germany would only likely provoke Germany, making it more belligerent in the future. Thus, for Target, either:

Target Wins > *Both Win*, or
Both Win > *Target Wins*

are logical possibilities. A Target that prefers *Target Wins* to *Both Win* is called *Disruptive.* A Target that prefers *Both Win* to *Target Wins* is called *Circumspect*.

Conflict and *Manipulator Wins* are clearly Target's two-least preferred outcomes. But, again, its actual preference between these two outcomes may, depending on circumstances, vary. If the cost of *Conflict* is *low, Target* may prefer to risk the uncertainty of any confrontation and resist Manipulator's demand at node 2. But when the cost of *Conflict* is high, so that *Manipulator Wins* > *Conflict*, Target may prefer to avoid the risk. Whether it does, however, will depend not only on its preferences between these two outcomes but also on its estimates of the credibility of both Manipulator's threat and promise, as will be discussed below. Thus, either

Conflict > *Manipulator Wins,* or
Manipulator Wins > *Conflict*

are logically defensible as rational strategic preference possibilities.

A Target that prefers *Conflict* to *Manipulator Wins* is called *Steadfast.* A Target that prefers *Manipulator Wins* to *Conflict* is called *Irresolute*. In the run up to the Munich crisis in 1938, both the British and French governments were clearly irresolute, that is, they preferred to avoid a war with Germany at almost any cost (Rock, 2000: 66).

Table 3 summarizes the preference assumptions that define four distinct types of Targets in the Carrot and Stick Game. Next I analyze this game for each of the four types of Manipulators and Targets when information about preferences (types) is common knowledge.

Table 3: Target's Preference and Type Designations

Target's Preferences	Type
Status Quo > *Target Wins* > *Both Win* > *Conflict* > *Manipulator Wins*	*Disruptive/Steadfast*
Status Quo > *Target Wins* > *Both Win* > *Manipulator Wins* > *Conflict*	*Disruptive/Irresolute*
Status Quo > *Both Win* > *Target Wins* > *Conflict* > *Manipulator Wins*	*Circumspect/Steadfast*
Status Quo > *Both Win* > *Target Wins* > *Manipulator Wins* > *Conflict*	*Circumspect/Irresolute*

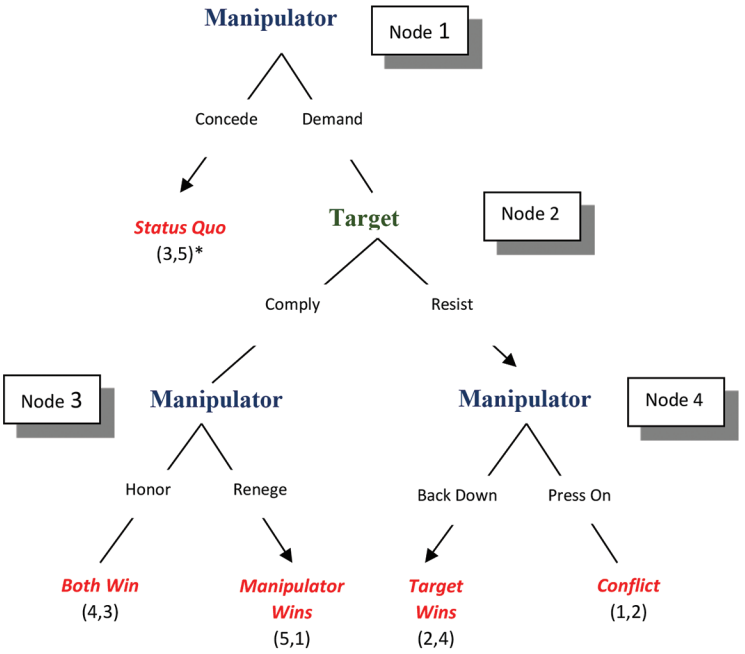
3. The Carrot and Stick Game with Complete Information

In this section I consider the Carrot and Stick Game with complete information. The standard measure of rational play in a dynamic (or extensive-form) game with complete information is subgame perfect equilibrium (Selten, 1975). A subgame perfect equilibrium requires that the players plan to choose rationally at every node of a game tree whether they expect to reach a particular node or not. The concept of a subgame perfect equilibrium is a refinement of Nash's well-known equilibrium concept, which is the accepted measure of rational behavior in static (or strategic-form) games. Nash equilibria, however, may be supported by irrational threats, this is, by threats that are not believable or credible. Selten's perfectness criterion eliminates that possibility.

In an extensive-form game of complete and perfect information in which the players know not only their place on the game tree at all times but are also fully informed about each other's preferences, a simple procedure known as *backwards induction* can be used to identify which outcomes are subgame perfect. As its name suggests, backwards induction involves working backwards up the game tree to determine, first, what a rational player would do at the last (or terminal) node (or nodes) of the game tree, what the player with the previous move would do given that the player with the last move is assumed to be rational, and so on until the first (or initial) node of the tree is reached. Outcomes that survive the backwards induction process are, by definition, subgame perfect.

To illustrate, consider for now the variant of the Carrot and Stick Game depicted in Figure 2. In this representation the assumption will be that Manipulator is of type *Perfidious/Reluctant* and that Target is the *Disruptive/Steadfast* type. The ordered pair beneath each

outcome represents the ordinal payoff to the players of these particular types, ranked from best (i.e., 5) to worst (i.e., 1). The first entry represents Manipulator's evaluation, the second, Target's. For example, in this variant of the Carrot and Stick Game, *Manipulator Wins* is Manipulator's best outcome (i.e., 5) and Target's worst (i.e., 1).



Key → = rational choice
(x,y) = ordinal payoff to Manipulator, to Target
* = subgame perfect equilibrium

Figure 2. The Carrot and Stick Game With a Perfidious/Reluctant Manipulator and a Disruptive/Steadfast Target

We begin by considering the calculus of Manipulator at the first node of the tree. At node 1 Manipulator can either do nothing (i.e., Concede) which brings about its (assumed) third-best outcome, *Status Quo*, or Demand an adjustment of it. Of course, the consequences of demanding a change in the *Status Quo* are uncertain since they depend, at least in part, on Target's likely response at node 2.

At node 2, Target can either Comply or Resist Manipulator's demand. Clearly, Target should (rationally) choose to comply if expects Manipulator to honor its promise (its third-best outcome), unless it expects Manipulator to back down at node 4, in which case the outcome is *Target Wins*, its second most-preferred outcome. On the other hand, it should resist the demand regardless of what it expects Manipulator to do at node 4 if it expects Manipulator to renege. Reneging brings about Target's least-preferred outcome, *Manipulator Wins*. The question is: what should Target expect Manipulator to do? Before we can answer this question, we must first consider Manipulator's choice at node 3.

By assumption, Manipulator is Perfidious. As the arrow indicates, this type of Manipulator rationally reneges at node 3. Anticipating this choice, Target should (again

rationally) choose to resist Target's demand at node 2. Recall that the assumption is that Manipulator is also Reluctant. A reluctant Manipulator plans to back down at node 4 which is the decision point that it anticipates reaching given Target's rational choice at node 2. Backing down at node 4 brings about Manipulator's next-worst outcome. Comparing this outcome, which is the rational consequence of making a demand, with the *Status Quo*, the rational consequence of not making a demand, and Manipulator's third-best outcome, Manipulator, perhaps reluctantly, decides that the rational course of action at node 1 is simply to do nothing. As indicated by the asterisk, the outcome associated with this choice, the *Status Quo*, is the unique subgame perfect equilibrium in this particular variant of the Carror and Stick Game.

The non-event associated with this denouement of the Carrot and Stick Game would be coded by an omniscient observer as a case of successful (general) deterrence. What is interesting about this result is that it is independent of Target's type. Notice from Table 4, which lists the subgame perfect equilibrium associated with each of the four types of Manipulators and Targets, that the *Status Quo* is the only rational strategic possibility if Manipulator is both *Perfidious* and *Reluctant*.

That the status quo might persist, and deterrence rationally work, regardless of Target's type (preferences) is an important insight into the interactive nature of deterrence relationships.[6] It is also an insight that is clearly missed by those theorists who focus exclusively on the characteristics of a target's threat (e.g., Lebow, 1981). In consequence, they produce a misleading, perhaps even a distorted, understanding of the dynamics of deterrence. As well, overlooking this straightforward result can introduce case selection bias in empirical examinations of crisis bargaining and contentious interstate relationships.[7]

Table 4: Subgame Perfect Equilibria in Carrot and Stick Game

		Target			
	Types:	**Disruptive/ Steadfast**	**Disruptive/ Irresolute**	**Circumspect/ Steadfast**	**Circumspect/ Irresolute**
Manipulator	Perfidious/ Determined	Status Quo	Manipulator Wins	Status Quo	Manipulator Wins
	Perfidious/ Reluctant	Status Quo	Status Quo	Status Quo	Status Quo
	Honorable/ Determined	Both Win	Both Win	Both Win	Both Win
	Honorable/ Reluctant	Status Quo	Status Quo	Both Win	Both Win

Much the same can be said about the strategic dynamic of the Carrot and Stick Game when Manipulator is both Honorable and Determined. Specifically, Target's preferences (type) are without strategic import. Regardless of its type, *Both Win*.

6. Zagare and Kilgour (2000, 142 – 143) reach a similar conclusion in the context of a one-sided (or unilateral) deterrence game.

7. For an ingenious way to avoid this problem, see Quackenbush (2011). See, also, Danilovic (2001).

Of course, this is not to say that Target is always a strategic bystander in the Carrot and Stick Game. There are distinct conditions when its preferences are determinative. When Manipulator is both Perfidious and Determined, the critical relationship is Target's preference between *Conflict* and *Manipulator Wins*. Steadfast Targets are able to ward off demands, with certainty. In this case, deterrence succeeds and the outcome is *Status Quo*. But when Target is Irresolute, *Manipulator Wins*. When Manipulator is both Perfidious and Determined, then, a credible threat by Target to resist at node 2 will negate any promise or threat that Manipulator makes.

By contrast, when Manipulator is both Honorable and Reluctant, it is Target's preference between *Target Wins* and *Both Win* that is strategically critical. The *Status Quo* will withstand a challenge if Target is Disruptive, that is, if it prefers the former outcome to the latter. On the other hand, as long as Manipulator is Honorable, that is, when its node 3 promise is credible, and Target is Circumspect, *Both Win*. Under certain conditions, then, a Disruptive Target will be able to successfully defend the *Status Quo* while a more Circumspect Target will fail to do so.

From the point of view of Manipulator, there is no combination of threats and promises that can ensure that it will fully get what it wants. To be sure, if Target is Irresolute, a Perfidious and Determined Manipulator's demand will be met. Other than that, however, Manipulator will be forced to give in order to get, which would be a net gain for Manipulator but not necessarily for Target.

Notice that neither *Conflict* nor *Target Wins* occurs when information is complete. That they do not is a direct consequence of Manipulator's presumed preference function. Recall that the assumption is that Manipulator prefers the *Status Quo* to either of these two outcomes. Clearly, it would not rationally make a demand if it anticipates that, in doing so, Target will resist and force it to either back off or fight. Instead, like Kaiser Wilhelm early in the 20th century, it may bide its time.

Of course, in the real world, conflicts occur, although not as often as generally thought. It is also the case that attempted fait accomplis fail when a player is forced to retreat. Clearly, under the most theoretically interesting conditions, these outcomes can occur only when information is incomplete, that is, when information about preferences is not common knowledge. In a follow up study to the present analysis, the Carrot and Stick Game with incomplete information will be investigated.

4. Coda

In this essay I explore the strategic characteristics of the Carrot and Stick approach to coercive diplomacy. Under complete information there are certain conditions under which a credible promise or a credible threat, used in isolation, is an inadequate crisis bargaining mechanism. As George (1991) recognizes, coercive diplomacy sometimes does not work. But when used in tandem, they are *always* successful, at least from the manipulating power's point of view, under the specific conditions used to examine the Carrot and Stick Game model in this essay. To put this in a slightly different way, there is no sure-fire

way for a target state to ward off a challenge. Deterrence, therefore, may fail even when a target is Steadfast and prefers *Conflict* to *Manipulator Wins*, suggesting, once again that contentious interstate relationships are, at once, both complex and extremely sensitive to the underlying strategic milieu (Zagare and Kilgour, 2000).

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