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WHEN IS IT RATIONAL TO BE MAGNANIMOUS IN VICTORY?*

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ABSTRACT

WHEN IS IT RATIONAL TO BE MAGNANIMOUS IN VICTORY?

There are two contending schools of thought on how a victor should treat a defeated party after a war or other major dispute. While magnanimity may quell the desire of the defeated party for revenge, it may also be instrumental in the defeated party's resurrection. Similarly, the defeated party may face the conflicting choices of whether to cooperate or not cooperate with the victor. These interdependent choices are modeled by a generic "magnanimity game" (MG), which subsumes different strategic situations that may arise in the aftermath of victory.

Two types of victor and six types of the defeated party define twelve specific games. General conditions under which each of the different outcomes in MG is rational, based on nonmyopic calculations in a sequential game, are derived.

Incomplete information about an opponent's preferences may complicate player choices, but sometimes knowing this information is unnecessary and other times a player need rule out relatively few specific games in order to make a rational choice. A defeated party may benefit from "moving power," but its effects may take considerable time to realize if information is incomplete, as illustrated by the 31-year conflict between Israel and Egypt. Historical examples from 19th and 20th-century wars and crises illustrate other outcomes in MG; normative implications of this game are also discussed.

WHEN IS IT RATIONAL TO BE MAGNANIMOUS IN VICTORY?

The time of reconstruction and recovery [of Iraq] should not be the occasion for vengeful actions against a nation forced to war by a dictator's ambition.
--Secretary of State James A. Baker 3d, February 6, 1991

While declaring that this [United Nations] resolution is unjust, they [the Iraqi Parliament] have found that there was no other choice than to accept . . . that which displeases us.
--Speaker of the Iraqi Parliament Saadi Mehdi Saleh, April 6, 1991

I. Introduction

A dilemma facing every victor in an interstate war is how to treat the vanquished opponent when hostilities end. Should the victor strive for a postwar settlement that addresses at least some of the grievances of the vanquished, or should it implement a new status quo that does not acknowlege these grievances? Magnanimity may quell the desire of the vanquished for revenge, but nonmagnanimity may prevent the vanquished from acquiring the means to mount future challenges.

If, as Clausewitz (1832) argued, wars are fought over the preferred political order, the vanquished's position in this order, after the war, cannot be ignored. Several scholars of international relations have analyzed the vanquished's role in the postwar stability of a system. Kissinger (1964), for example, concluded from his analysis of early 19th-century Europe that restoring stability to a postwar system requires magnanimity toward the vanquished opponent by the defenders of the status quo. Oren (1982, p. 150), focusing on dyadic conflicts, also assembled evidence that "prudence in victory" is more stabilizing than punitive behavior by the victor, because the latter strategy produces a desire for revenge on the part of the vanquished.

Aron (1966), on the other hand, advanced a "peace by empire" argument, claiming that postwar stability is served better by a total subjugation of the opponent, which robs it of the means, and hence the opportunity, to initiate future conflicts. Maoz (1984), using aggregate data on serious interstate disputes, tested the Oren and Aron theses and found empirical support for the latter. Later Maoz (1990, pp. 256-257) offered a rationale for "peace by empire" by showing this to be the Nash equilibrium in a specific 2 x 2 ordinal game.

In this paper, we approach the problem of magnanimity from a different perspective--namely, that the victor's dilemma cannot be resolved exclusively in favor of magnanimity or nonmagnanimity. We derive conditions under which "prudence in victory" on the one hand, and "peace by empire" on the other, would be rational, given possible counteractions that the defeated party might take.

We thus assume that the defeated party is not inert but itself a player in a game. (True, there have been wars in which the defeated party was utterly devastated and, therefore, incapable of making any choices, but these seem relatively rare.) The postwar political order is thereby the product of interdependent choices of the victor and the defeated party: the victor's rational choice of magnanimity or nonmagnanimity will depend on whether the defeated party is cooperative or not, and the defeated party's choice will depend on whether the victor is magnanimous or not. To analyze these strategic choices, we define a generic "magnanimity game," which subsumes different strategic situations that may arise in the aftermath of victory.

These situations reflect the different preferences that the victor and the defeated party may have for the possible outcomes in this game. Thus, rather than positing a specific game between the victor and the defeated party, we allow for two types of the former and six types of the latter, which defines twelve specific games. We then derive conditions under which magnanimity or nonmagnanimity by the victor, and cooperation or noncooperation by the defeated party, are rational, detailing these outcomes in the twelve specific games.

Our rationality calculations are not the conventional ones of classical game theory. Starting from the postwar outcome, we allow the players to make sequential choices, based on nonmyopic calculations, but we assume that they have an aversion to cycling. We show that their rational strategies, which may not coincide with their Nash equilibrium strategies in a nonseqential game, define three classes of games, in which each possible outcome may be rational.

We then analyze how incomplete information about the preferences of an opponent may affect player choices. If the defeated party possesses "moving power," we demonstrate how it can induce the victor to be magnanimous in certain games, but this may require a test of wills if there is incomplete information about the possession of such power.

We apply the magnanimity game to several historical cases--mostly the aftermaths of wars in the 19th and 20th centuries--to illustrate, empirically, the different possible outcomes in the game. We also discuss the effect of Egypt's moving power in its 31-year conflict with Israel from 1948 to 1979, suggesting that, after the 1973 Yom Kippur War, a recognition by Israel of Egypt's ability to rebound after continuing defeats, and a recognition by Egypt of Israel's superior military strength, pushed both countries toward settling their conflict. We conclude by discussing some normative implications of our study and offer some suggestions for future research.

2. The Magnanimity Game

Consider the aftermath of a war or other major international dispute, such as a crisis, in which one player, the victor (V), prevails over another player, the defeated (D). In the postdispute situation, assume V has a choice of being either magnanimous (M) or not magnanimous ($\bar{M}$) to D, and D has a choice of either cooperating (C) or not cooperating ($\bar{C}$) with V.

In section 5 we shall discuss the meaning of these choices, and the resulting outcomes, in some historical cases. For now assume that, immediately after the dispute, the players are at Status Quo in the payoff matrix of Figure 1. At this outcome, V is in its best position and D is in an inferior position--that is, there is at least one other outcome that D would prefer.

To give further structure to this postdispute situation, we make some additional assumptions about how the players rank the various outcomes in Figure 1, in which the first value in each ordered pair is the payoff to V

Figure 1 about here

(v), the second value the payoff to D (d). In this representation, the higher the numerical subscripts of v and d, the greater the payoffs. How these payoffs compare with the payoffs having lettered subscripts is indicated below, moving counterclockwise from the upper left outcome in Figure 1:

Figure 1

Preferences of Players in MG

		Defeated (D)	
		Cooperate (C)	Don't Cooperate ($\bar{C}$)
Victor (V)	Don't Be Magnanimous ($\bar{M}$)	(v_4, d_i) Status Quo	(v_s, d_j) Rejected Status Quo
	Be Magnanimous (M)	(v_3, d_{i+}) Magnanimity	(v_t, d_{j+}) Rejected Magnanimity

Key: $v_4 > v_3 > v_s, v_t$ (s, t = 1 or 2)

$d_{i+} > d_i; d_{j+} > d_j$

1. $\bar{M}$-C (Status Quo) is best for V (v_4) and inferior to Magnanimity for D ($d_i < d_{i+}$).

2. M-C (Magnanimity) is next-best for V (v_3) and superior to Status Quo for D ($d_{i+} > d_i$).

3. M-$\bar{C}$ (Rejected Magnanimity) is inferior for V (v_t, where t = 1 or 2, i.e., this outcome is either worst or next worst) and superior to Rejected Status Quo for D ($d_{j+} > d_j$).

4. $\bar{M}$-$\bar{C}$ (Rejected Status Quo) is inferior for V (v_s, where s = 1 or 2, i.e., this outcome is either worst or next worst) and inferior to Rejected Magnanimity for D ($d_j < d_{j+}$).

These rankings, because they do not give a complete ordering of outcomes from best to worst for each player, do not define a specific ordinal game but rather a generic game. This game, which we call the Magnanimity Game (MG), subsumes the preference orderings of 12 specific games (to be given in section 3).[1]

Thus, when D chooses $\bar{C}$, we leave unspecified whether V prefers Rejected Magnanimity (v_t) to Rejected Status Quo (v_s). V might prefer the former if its generosity cannot be seriously exploited by an "ungrateful" D and will ultimately redound to V's favor. By contrast, if V's generosity creates an opportunity for D to recoup its losses and challenge V again, V might prefer to clamp down by being nonmagnanimous.

In either event--whether V is magnanimous or not--we assume that V is always worse off when D does not cooperate ($v_4 > v_3 > v_s, v_t$, where s, t = 1 or 2). Not only is V always better off when D cooperates, but we also assume that Magnanimity (v_3) is next best to Status Quo (v_4). Thus, V gives up something to improve D's lot at Magnanimity, but V suffers still more (v_1 or v_2) when D chooses $\bar{C}$.

The partial ordering of payoffs we assume for D is less complete than that assumed for V. Because D prefers its payoffs with "plus" subscripts to comparable payoffs without the plus, D desires that V always be magnanimous. But because we assume no ordering between the i/i+ payoffs on the one hand, and the j/j+ payoffs on the other, we cannot make any comparisons between D's payoffs associated with C versus $\bar{C}$.

These partial orderings for the players do not render any outcome a Nash equilibrium, much less endow either player with a dominant strategy, in the 2 x 2 game depicted in Figure 1. Yet, because we do not assume that the players make simultaneous strategy choices--or, equivalently, choose their strategies in ignorance of each other--in a 2 x 2 game, these game-theoretic concepts are not, in fact, germane to our analysis.

Instead, we use the 2 x 2 game to indicate the partial ordering of payoffs by the players. How they make their choices, before arriving at a final outcome, depends on the rules of play. For this purpose, we assume that (1) MG always starts at Status Quo, just after the conclusion of a dispute, and (2) each player may then decide whether to depart from (v_4, d_i) or not.

This latter assumption, which permits either player to initiate a move from Status Quo, requires further elaboration. Specifically, the players at Status Quo may perform either a one-sided analysis or a two-sided analysis. Thus, if V, in considering a departure from Status Quo, bases its calculations on its own payoffs and the presumption that D will not move, then V's analysis is one-sided; if, on the other hand, V also takes into account that D's payoffs may make it rational for D to initiate a move from Status Quo, then V's analysis is two-sided.

Because V obtains its best outcome at Status Quo, one-sided analysis would make it rational for V to stay at this outcome. However, two-sided analysis--which, in addition, indicates what it is rational for D to do--may prescribe otherwise, as we shall demonstrate presently.[2]

Which, if either player, moves first will be one product of our analysis. In this analysis, we assume that the players have complete information about the partial orderings in MG, which will be extended to the complete orderings of specific games later. We shall relax this assumption in section 4 to explore implications of incomplete information in the specific games.

We begin by analyzing D's rational choice, if it moves first, and then consider how this choice may affect V's rational choice. As we shall see, the sequential choices that the players make in MG depend crucially on a kind of nonmyopic rationality, constrained by a rational aversion to cycling.

1. D's Analysis of a Switch from Status Quo

To determine D's rational choice--both for its own purpose and later for V's--consider the game tree in Figure 2, in which D has the first

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Figure 2 about here

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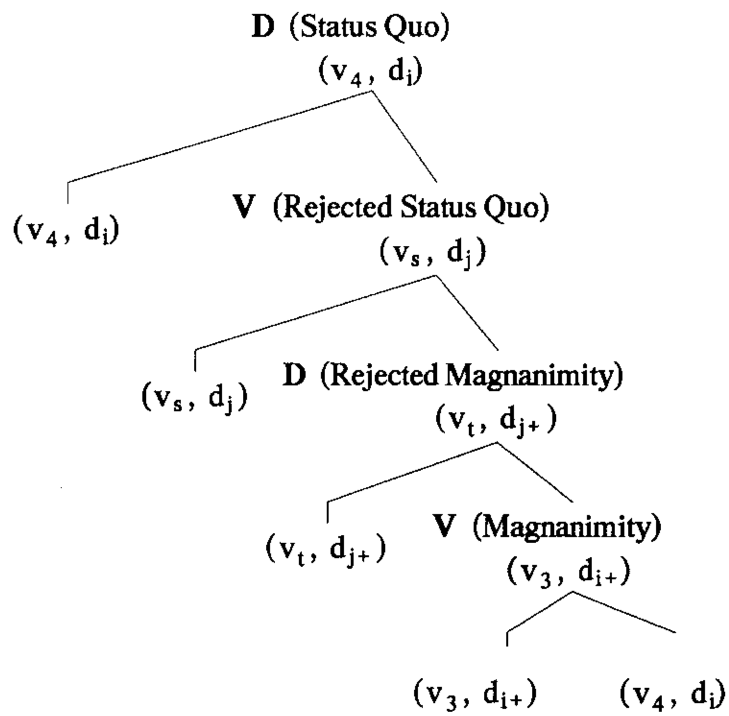
move. The players can then make strictly alternating choices, according to the theory of moves (Brams, 1983), without the possibility of backtracking.[3] Thus in Figure 2, first D, next V, then D, and finally V can move in succession from Status Quo. Payoffs accrue to the players only at the outcome where the

Figure 2

Game Tree, Starting with D's Move at Status Quo, in Play of MG



Key: **D** = defeated; **V** = victor

Left branch = Stay; Right branch = Move

$v_4 > v_3 > v_s, v_t$ (s, t = 1 or 2)

$d_{i+} > d_i$; $d_{j+} > d_j$

move-countermove process stops, so we preclude the accumulation of payoffs, as in a repeated game.

Consider V's final move at the bottom of the game tree in Figure 2, where, because $v_4 > v_3$, the game would return to Status Quo from Magnanimity. D, recognizing that it does not do better by departing from Status Quo only to have play return to it in a series of moves, would not allow play to reach Magnanimity from Rejected Magnanimity. More generally, we assume

> Rationality of No Cycling: If it is in one player's interest, at the outcome preceding that which would complete the cycle, to return to Status Quo, the other player--to foreclose the possibility of cycling--will not permit the first player to move to this preceding outcome.[4]

Thus in Figure 1, D will never allow the game to move three steps clockwise from Status Quo to Magnanimity at (v_3, d_{i+}), lest V return to Status Quo at (v_4, d_i) and complete the cycle. Consequently, D will not move initially from Status Quo to Rejected Status Quo unless either d_j or d_{j+}--depending on which of the two $\bar{C}$ outcomes V prefers and will therefore choose--is better for D than Status Quo.

In other words, the outcome V prefers--either Rejected Status Quo or Rejected Magnanimity--must also be better for D than Status Quo to justify D's switch to $\bar{C}$. Given this switch, D will never switch back to C and thereby allow V to complete the cycle. Hence, the Figure 2 game tree need not be analyzed below V's choice of staying at Rejected Status Quo or moving to Rejected Magnanimity. In applying backward induction to the truncated game tree, the better of these two outcomes for V will be compared by D with Status Quo to determine whether D will stay initially at Status Quo.

2. V's Analysis of Staying at Status Quo Versus Switching to Magnanimity

If it is rational for D to stay, V, which obtains v_4 at Status Quo, has no reason to move either. But if it is rational for D to depart from Status Quo, then we must ask whether V does better staying at Status Quo or switching to Magnanimity--or it makes no difference--if it can move first.

Clearly, it is never in V's interest that D choose $\bar{C}$ and not move from it, because both $\bar{C}$ payoffs for V (v_s and v_t, where s, t = 1 or 2) are inferior to the two C payoffs for V, which give it v_4 and v_3. The question then is whether V can, by switching first to M, render D's subsequent switch to $\bar{C}$ irrational. That is, can V, by giving up its best outcome (Status Quo) for its next-best (Magnanimity), which is always better for D ($d_{i+} > d_i$), rob D of any reason for implementing one of V's two worst outcomes?

This is the fundamental trade-off that the Magnanimity Game forces V to contemplate in a two-sided analysis. We shall proceed by examining the consequences for V of staying at Status Quo initially, versus switching to Magnanimity, when it is rational for D to depart from Status Quo.

Consider first the conditions under which V will be hurt because D finds it rational to switch from Status Quo initially. (The rest of this paragraph formalizes somewhat what we said in subsection 1 above.) If V stays at this outcome, as one-sided analysis would always prescribe, then D will move from this outcome if it does better at V's best response to its choice of $\bar{C}$, either at (v_s, d_j) or (v_t, d_{j+}). V's best response to this choice--either to stay at the first outcome (Rejected Status Quo) or to move to the second (Rejected

Magnanimity), whence D will not move again because of Rationality of No Cycling--will depend on which outcome gives V a payoff of v_2 and which a payoff of v_1. D will switch from Status Quo, and thereby always hurt V, if

$$\begin{aligned} &d_j > d_i \text{ when } v_s = v_2, \text{ giving Rejected Status Quo; or} \\ &d_{j+} > d_i \text{ when } v_t = v_2, \text{ giving Rejected Magnanimity.} \end{aligned} \tag{1}$$

Next consider the conditions under which V will be hurt because, after departing from Status Quo to Magnanimity (which always helps D), D still finds it rational to switch to $\bar{C}$. Because D does better at Magnanimity than Status Quo, these conditions are necessarily more stringent than those that lead D to depart from Status Quo. Specifically, D will switch from Magnanimity if

$$\begin{aligned} &d_{j+} > d_{i+} \text{ when } v_t = v_2, \text{ giving Rejected Magnanimity; or} \\ &d_j > d_{i+} \text{ when } v_s = v_2, \text{ giving Rejected Status Quo.} \end{aligned} \tag{2}$$

Observe that the first condition of (2) terminates moves at Rejected Magnanimity, so D will not be in a position to complete the cycle. The second condition makes it irrational for D to complete the cycle--going from Rejected Status Quo (giving d_j) back to Status Quo (giving d_i)--because $d_j > d_{i+}$ implies $d_j > d_i$, making Rejected Status Quo preferable. Thus, Rationality of No Cycling is unnecessary to prevent cycling back to Status Quo in a counterclockwise direction.

We can use inequalities (1) and (2) to give necessary and sufficient conditions for the rational choice of the following outcomes of MG:

- Status Quo is rational iff (if and only if) (1) is not satisfied;

- Magnanimity is rational iff (1) is satisfied and (2) is not satisfied;
- Rejected Status Quo or Rejected Magnanimity is rational iff (1) and (2) are both satisfied.[5]

We shall next indicate the specific ordinal games that meet each of these conditions and draw generalizations from them.

3. Rational Outcomes in the Specific Games

In Figure 3 we have divided the 12 specific games subsumed by MG

Figure 3 about here

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into three mutually exclusive classes, where the numbers in parentheses are those given in Rapoport and Guyer (1966) for the 78 distinct 2 x 2 strict ordinal games:[6]

1. Status Quo Is Rational (4 games). It is rational for V not to be magnanimous, because D will not depart from Status Quo.

2. Magnanimity Is Rational (4 games). It is rational for V to be magnanimous, because otherwise D will depart from Status Quo--but not from Magnanimity. These games include Prisoners' Dilemma (#5).

3. Rejected Status Quo or Rejected Magnanimity Is Rational (4 games). Even being magnanimous does not prevent the choice of $\bar{C}$ by D in these games, which include Chicken (#12). Rejected Magnanimity is rational in 3 of these games (#10, #11, and #12), whereas Rejected Status Quo is rational in the remaining game (#9), which is the only game of pure conflict among the 12: what is best (4) for one player is worst (1) for the other, and what is next best (3) for one is next worst (2) for the other.

Figure 3

Classification of 12 Specific Ordinal Games Subsumed by MG

1. Status Quo Is Rational (4 Games)

1 (39)

(4,2)	(2,1)
(3,3)	(1,4)

2 (21)

(4,2)	(2,1)
(3,4)	(1,3)

3 (19)

(4,3)	(2,1)
(3,4)	(1,2)

4 (20)

(4,3)	(1,1)
(3,4)	(2,2)

2. Magnanimity Is Rational (4 Games)

5 (12)

(4,1)	(2,2)
(3,3)	(1,4)

Prisoners' Dilemma

6 (48)

(4,1)	(2,2)
(3,4)	(1,3)

7 (72)

(4,1)	(1,2)
(3,4)	(2,3)

8 (55)

(4,2)	(1,1)
(3,4)	(2,3)

3. Rejected Status Quo or Rejected Magnanimity Is Rational (4 Games)

9 (11)

(4,1)	(2,3)
(3,2)	(1,4)

Pure conflict

10 (35)

(4,1)	(1,3)
(3,2)	(2,4)

11 (39)

(4,1)	(1,2)
(3,3)	(2,4)

12 (66)

(4,2)	(1,1)
(3,3)	(2,4)

Chicken

Key: 4 = best; 3 = next best; 2 = next worst; 1 = worst

Circled outcome is rational choice when play starts at Status Quo (upper-left outcome); underscored outcome is pure-strategy Nash equilibrium in 2 x 2 game

Game number in parenthesis is that given in Rapoport and Guyer (1966); games #1 and #11 have the same number in Rapoport and Guyer (1966) (#39), but they are different here because the players, who rank all outcomes except Magnanimity differently, are distinguishable.

We caution that although there is an even 4-4-4 division of the specific games among the three classes, these numbers may bear little relation to the empirical frequency with which Status Quo, Magnanimity, or Rejected Status Quo/Rejected Magnamity are actually chosen in real-life games.

We summarize our results on magnanimity by

Proposition 1. It is rational for V to be magnanimous in 7 games (all class 2 games and games #10, #11, and #12 in class 3) and not magnanimous in 5 games.

It is worth noting that the rational outcomes in the 12 games do not always coincide with the pure-strategy Nash equilibria in the 2 x 2 versions of these games, in which players are assumed to make simultaneous or independent strategy choices. True, the rational outcomes always coincide with Nash equilibria in class 1 and class 3 games (see Figure 3), but in class 2 games, including Prisoners' Dilemma (#5), the rational outcome of Magnanimity is never a Nash equilibrium. In fact, Magnanimity is not a Nash equilibrium in any of the 12 specific 2 x 2 games, which makes this outcome inexplicable as a rational choice if play is simultaneous.

Starting at Status Quo and allowing the players to make sequential moves, however, induces Magnanimity in all class 2 games. In Prisoners' Dilemma and #6, in particular, Magnanimity obviates the choice of the Pareto-inferior (2,2) Nash equilibria in these games. More generally, we have

Proposition 2. The rational outcome in all 12 games is Pareto optimal --there is no other outcome better for both players.

Finally, observe in Figure 3 that all games with (4,3) "cooperative" Status Quos are in class 1, whereas no games in class 1 have (4,1) "pure-conflict" Status Quos, giving

Proposition 3. Status Quo is never rational when it is D's worst (1) outcome, but it is always rational when it is D's next-best (3) outcome.

In other words, the better off D is at Status Quo, the more likely this outcome will be the rational choice of the players.

In class 3 games, it is inconsequential whether D or V departs first from Status Quo: D will always choose $\bar{C}$, and V can never do better than choose M in #9 and $\bar{M}$ in the three other class 3 games. Similarly, in class 1 games, the order of moves is inconsequential, because it is irrational for either player to depart from Status Quo. In class 2 games, on the other hand, it is in both players' interest that V switch first and move to M; otherwise, D's choice of $\bar{C}$ results in a Pareto-inferior outcome, which Rationality of No Cycling prevents D from rectifying by reverting to C. Altogether, we have

Proposition 4. Either the order of moves in MG is inconsequential, or there will be a consensus on the order.

Because the players will agree on who, if anybody, should move first in MG, the order of moves from Status Quo can be left endogeneous in this game. Thus, there will never be a conflict on whether the order of moves is given by Figure 2, in which D has the first move from Status Quo, or is given by an analogous tree in which V has the first move.

It is worth noting that the players' rational strategies in MG, because they are the product of backward induction on a game tree, are a *subgame perfect* Nash equilibrum in sequential play (Selten, 1975). We emphasize that these and our preceding results assume that the players' payoffs depend only on the rational outcome, not on how it was reached--that is, what outcomes were "passed through."[7]

We shall next show that the rational outcome may be indeterminate when information about preferences is incomplete, but some knowledge about an opponent always eliminates this indeterminacy. Then we shall demonstrate how D, if it possesses "moving power," may induce a better rational outcome for itself in certain games.

4. Incomplete Information and Moving Power

To analyze the effects of incomplete information on the play of MG, consider V's preferences, which may be of two types: given D chooses $\bar{C}$, either V prefers $\bar{M}$ (Status Quo Rejected) over M (Magnanimity Rejected), or vice versa. We call the first type *hard* (V prefers to be tough when D is, or $s = 2$ and $t = 1$), and the second type *soft* (V prefers to be soft when D is tough, or $t = 2$ and $s = 1$).

Assume V knows whether it is hard or soft but does not know D's preferences, of which there are six types (we will not give names to them). If V is *totally* ignorant of D's type, it is unable to choose a rational strategy. However, observe in Figure 3 that if V is soft, its rational strategy is M in all games except #4, which defines one type of D opponent. If V is hard, its rational strategy is $\bar{M}$ in all games except #5 and #6, which define two types of D opponent. Thus we have

Proposition 5. <u>If V is soft, it need rule out only one type of D (out of six) to render its strategy of M rational. If V is hard, it must rule out two types to render its strategy of $\overline{M}$ rational.</u>

As one would expect, a soft V will generally choose M and a hard V will generally choose $\overline{M}$.

Now reverse matters and assume that D knows its own type (of the six possible). However, assume that D does not know whether V is hard or soft. This means that D can narrow down the games being played to a pair, of which there are six, depending on V's type (hard or soft): (1,12); (2,8); (3,4); (5,11); (6,7); (9,10). D's choice of C is rational in (2,8), (3,4), and (6,7), whereas $\overline{C}$ is rational in (9,10); neither strategy is rational in <u>both</u> games of pairs (1,12) and (5,11). Thus we have

Proposition 6. <u>Assume D knows its own preferences, of which there are six types. Four of D's six types can choose a rational strategy (either C or $\overline{C}$) without knowing whether V is hard or soft. For D's two remaining types, this knowledge is necessary for D to choose a rational strategy.</u>

The four games that represent the latter two types are Prisoners' Dilemma (#5) and Chicken (#12)--and their two counterparts, in which V has Prisoners' Dilemma preferences and D Chicken preferences (#1) and the reverse (#11). Thus, D can determine its rational strategy if its preferences are not those of Prisoners' Dilemma or Chicken. If they are, it must ascertain whether V is hard or soft (i.e., has Prisoners' Dilemma or Chicken preferences), which fixes one of the four specific games. Prisoners' Dilemma and Chicken, incidentally, are the only 2 x 2 games in which the players' preferences are symmetrical.

There is another kind of incomplete information that may affect the choice of rational strategies in MG. Suppose V is not sure whether D is averse to clockwise cycling and, therefore, whether Rationality of No Cycling is a valid assumption to make of D in a sequential game.[8] Thus, if D moves from Status Quo to Rejected Status Quo, assume that V, before moving to Rejected Magnanimity, does not know whether D will then move on to Magnanimity.

By itself, this possible move by D is not a problem for V, who benefits by obtaining v_3 instead of v_1 or v_2. Neither is it a problem if V then returns the game to Status Quo, where its payoff is v_4. The problem arises if D now chooses to depart once again from Status Quo, and V has a greater aversion to cycling than D does.

If this is the case, and D knows this, it is rational for D to depart initially from Status Quo in all class 1 games except #1.[9] The move-countermove process would then stop at Magnanimity, because V, fearing continued cycling, would act to prevent it. Alternatively, V may switch from $\bar{M}$ to M at the start, as in class 2 games.

We say that D has moving power (Brams, 1982, 1983, 1985) if it is willing and more able to cycle than V. Assume, for now, that both players know this (i.e., this information is common knowledge). This power invalidates Rationality of No Cycling for D--indeed, it makes it rational for D not to stop at Rejected Magnanimity but instead to continue to Magnanimity, giving

Proposition 7. If D has moving power and V recognizes this, the outcome will be Magnanimity rather than Status Quo in class 1 games (#1 excepted) as well as class 2 games.

To induce Magnanimity in all class 1 games except #1, D must demonstrate both its wherewithal and resolve to continue to reject Status Quo, if the game cycles, until V offers concessions--namely, stops at Magnanimity. Note that this rejectionist strategy serves a different purpose in class 3 games, wherein D has no interest in reverting to C after initially choosing $\bar{C}$.

An asymmetry of moving power in favor of D, then, leads to Magnanimity in all class 1 games except #1, undermining the selection of Status Quo as the rational outcome in these games. But because Magnanimity is not the rational outcome in #1, even when D possesses moving power, D's possession of such power does not eliminate entirely the ability of V to implement Status Quo and obtain its best outcome (4).

If V has only incomplete information about D's moving power (i.e., it is not common knowledge), a contest may ensue to determine which player can hold out longer in class 1 games, wherein such power makes a difference in all games except #1. Specifically, D may have to demonstrate both its wherewithal and resolve to continue to reject Status Quo, if the game cycles, until V offers concessions--namely, stops at Magnanimity. (Note that this rejectionist strategy serves a different purpose in class 3 games, wherein D has no interest in reverting to C after initially choosing $\bar{C}$.)

Observe that in games #2-4, D's possession of moving power can ensure its best (4) outcome of Magnanimity, whereas Status Quo gives it an inferior outcome of 3 or 2. We shall give an historical instance of such power later, about which there seems to have been incomplete information, leading to protracted conflict. Because determining who, if anybody, has moving power may be difficult even when players have relatively good intelligence, it seems to introduce a more radical kind of uncertainty into the play of MG than does incomplete information about player preferences.

To summarize our results on incomplete information, four of six D types can make rational strategy choices without knowing whether V is soft or hard, whereas two D types must know V's type. Depending on whether V is soft or hard, V need rule out one or two D types in order to make a rational choice. Finally, incomplete information about whether D possesses moving power renders uncertain the rationality of Status Quo versus Magnanimity in three class I games, which may lead to a test of wills or forces.

5. Applications of MG to Historical Cases

Our discussion of cases in this section is limited to an illustration of some of our formal results. We shall not attempt to test our propositions in any precise sense, which would require ascertaining the preferences, moving power, and information of the players--and trying to corroborate that they made strategy choices consistent with the model. Instead, we shall give examples in which the four different outcomes of MG appear to have been chosen and one case in which moving power seems to have been decisive.

These examples, we believe, lend plausbility to MG as an aid in thinking about the conditions that give rise to magnanimity or nonmagnanimity on the part of the victor, and its acceptance or rejection by the defeated. These conditions, we hope, might later be tied more systematically to the preferences, power, and information of the players in a rigorous empirical test of the model.

Status Quo. One war from the 19th century and two from the 20th century illustrate this outcome. After France's defeat in the Franco-Prussian War of 1870-71, Prussia humiliated France by issuing a proclamation of the new German empire at the Versailles Palace of Louis XIV, which it followed with a victory parade through the streets of Paris. More significant, France was required to pay an indemnity of five billion francs (with German occupation troops remaining until payment was completed, which occurred in 1873), and the French provinces of Alsace and Lorraine were annexed to Germany.[10]

While Chancellor Otto von Bismarck successfully opposed some of the more extreme demands his army made against France in 1871, it is clear that Germany chose $\overline{M}$ and France could do little but swallow its defeat. Indeed, contemplating their day of revenge, which was to come at Versailles almost fifty years later (1919), the French coined the phrase, "Never speak of it, always think of it" (Ziegler, 1984, p. 17).

In the aftermath of World War I, not only was Germany required to surrender unconditionally, but it was also forced to accept the harsh terms of a settlement imposed by the allies. Likewise, the surrender of Nazi Germany and Japan at the end of Warld War II was unconditional, with Germany this time divided into four zones. Once again, the allies made no concessions after the war, although the Marshall Plan, beginning in 1947, helped tremendously in the later reconstruction of Europe, including West Germany.

There was no Marshall Plan after World War I, and Germany moved inexorably toward Nazism, especially after 1933. One might contrast the aftermaths of the two world wars by saying that, immediately after both, the allies chose $\overline{M}$ and Germany could do no better than choose C (Status Quo). But a subsequent shift toward M by the allies after World War II engendered West Germany's choice of C (Magnanimity), whereas the lack of such a shift by the allies after World War I led Germany eventually to choose $\bar{C}$ (Rejected Status Quo).

In summary, the immediate aftermath of the Franco-Prussian War and both world wars was Status Quo. By the dawn of World War I in 1914, however, the 1871 Status Quo had probably deteriorated to Status Quo Rejected--to the detriment, ultimately, of both France and Germany, both of which suffered horrendous losses in World War I.

Likewise, the Status Quo of 1918 became Rejected Status Quo some twenty years later, with the world on the verge of World War II. By comparison, only ten years after World War II the outcome had certaintly become Magnanimity, with West Germany joining NATO in 1955 and Japan becoming part of the Western alliance, too. On the other hand, the victors of World War II had parted ways to become rivalrous superpowers.

Magnanimity. The Magnanimity outcome after World War II became a reality only some years after the war, which raises the question of what time span the model encompasses. This is an empirical question to which different answers are possible, depending on one's conception of how long a postdispute situation exists after a conflict.

We have no strong opinion about this, but there are certainly examples of the choice of Magnanimity immediately after a war. Consider the behavior of the Prussians after their victory in the Seven Weeks' War (1866) against the Austrians, which we alluded to earlier (note 10):

After defeating the Austrian army at the decisive battle of Sadowa,

> the Prussian army did not pursue the Austrian army across the Danube River. It did not hold a victory parade through the streets of Vienna . . . [and it] did not annex portions of Austria near its own borders, even though some justification could have been made for incorporation (Ziegler, 1987, p. 15).

What was the rationale of Bismarck's choice?

> This policy of restraint was achieved by some effort on Bismarck's part, against the desires of the king and some of his advisers. Bismarck realized, as the king did not, that the work of German unification was not yet completed, and a humiliated and bitter Austria would be a potential ally for the new obstacle that now stood in Prussia's way, France (Ziegler, 1987, p. 15).

Prussia thereby headed off Austria's choice of $\bar{C}$ by instead moving to M, unlike its later choice of $\bar{M}$ against France. Indeed, the short duration of the Seven Weeks' War can in part be explained by Bismarck's limited war aim, which was to prevent Austrian influence in German affairs--and not acquire Austrian territory, as Prussia later did against France.

A more recent example of a magnanimous victor is David Ben Gurion after Israel's War of Independence. Although in late 1948 and early 1949 Israeli military capabilities permitted further territorial expansion to the north, east, and south, Ben Gurion "brought the war to an end and drew the lines delineating the new state under the guidance of the precepts of prudent moderation" (Oren, 1982, p. 155). Most noteworthy was his decision to withdraw Israeli troops from the Rafa heights, a key strategic point on the southern front, over the strong objections of his army staff (Sachar, 1979, p. 346).

The 1962 Cuban missile crisis is arguably another case ending in Magnanimity. Although the Soviet agreement to withdraw their missiles from Cuba was an outcome that John Kennedy could present as an American victory, his brother, Robert Kennedy, wrote that

> after it was finished, he made no statement attempting to take credit for himself or for the Administration for what had occurred. He instructed all members of the Ex Comm and government that no interview would be given, no statement made, which would claim any kind of victory (Kennedy, 1969, pp. 126-127).

And in his subsequent public statements on October 28 and November 2 and 28, President Kennedy refrained from claiming victory and emphasized instead the broad themes of peace in the Caribbean and the reduction of world tensions.

Rejected Status Quo. The 1979 Soviet invasion of Afghanistan illustrates this outcome. After the Soviets captured Kabul, executed the Afghan president, and installed their own puppet, the Afghan rebels continued to resist, waging a long and costly guerrilla war--with considerable help from the United States--that eventually forced the Soviets to withdraw in 1988.

Similarly, although Israel managed to defeat and eject the Palestine Liberation Organization from Lebanon after its 1982 invasion, raids by the PLO have continued to this day. On the other hand, Egypt and Israel chose

Magnanimity after the 1973 Yom Kippur War, which we shall explain later in terms of moving power.

Rejected Magnanimity. This outcome seems the most difficult to document, because magnanimity, like beauty, is in the eye of the beholder. Thus, if V claims it was magnanimous, D can respond that this was not so, and, hence, by not cooperating it never "rejected" magnanimity. Nonetheless, we present two cases that seem to illustrate the selection of this outcome.

After its invasion of Cyprus on July 20, 1974, Turkey could credibly claim victory on August 16, having gained control of 40 percent of the island. On Feburary 13, 1975, Turkish Cypriot leaders declared a separate state on the northern part of the island. At the same time, they offered Greek Cypriots a confederacy, with power to be shared equally in a single state (though Greek Cypriots outnumbered Turkish Cypriots by four to one). This offer, whose "magnanimity" might be questioned, was rejected, and a formal settlement of this conflict has yet to be achieved.

A quick settlement was attempted by Saddam Hussein after his invasion of Iran on September 22, 1980. Although his forces encountered only feeble and disorganized resistance initially, Hussein did not capitalize on his advantage. Instead, he "voluntarily halted the advance of his troops within a week after the onset of hostilites, and then announced his willingness to negotiate an agreement" (Karsh, 1989, p. 211). Not only was this offer summarily rejected by Ayatollah Khomeini, but the war ground on for nearly eight more years.

Because the Iran-Iraq War had just commenced at the time of Hussein's offer, this case is not strictly comparable to earlier cases, in which a decisive military victory had been achieved. Hussein's offer and Khomeini's response is probably closest to the Rejected Status Quo cases of the Soviet invasion of Afghanistan and the Israeli invasion of Lebanon. Although the initial victories in these cases were more consequential, the aftermath of each invasion was continued fighting that blurred the identification of a victor and a defeated party.

Moving Power. We take here an extended view of Israeli-Egyptian relations from 1948 to the Camp David accords of 1979. Our purpose is to sketch a strategic explanation of this more than three-decade conflict in terms of cycling in MG. More specifically, we shall attempt to show how Egypt's moving power, as D, enabled it to effect Magnanimity in a class 1 game in which Status Quo would, if D did not possess this power, be the rational outcome (i.e., in games #2, #3, and #4).

The protracted conflict between Israel and Egypt was punctuated by five wars in 1948, 1956, 1967, 1969-70, and 1973. In each of these wars, Israel prevailed but was unable, until 1979, to stabilize a postwar Status Quo, despite the plethora of military and diplomatic agreements, UN resolutions, and mediation efforts that followed each war (Touval, 1982). Rather, recurring cycles of violence and short-term accommodations characterized this period.

Although we shall not try to pin down the preferences of the players, these cycles seem explicable as a consequence of incomplete information about moving power in games #2-4. Moving power, in the present context, gives a player the ability to engage its opponent in repeated military confrontations, from minor skirmishes to major wars (including wars of attrition), even though this player may chronically lose.

The cycling terminates when V finally realizes that D has the resolve to revert again and again to Rejected Status Quo. Only when V's information about D's moving power is clarified or otherwise made complete does Magnanimity become rational and the cycling halt.[11]

In fact, the repeated defeats suffered by the Egyptians did not deter them from rejecting each new status quo and confronting the Israelis on the battlefield again. That the Egyptians believed they possessed moving power is echoed in the comments of Hasannin Haykal, a well-known Egyptian journalist and confidant of Nasser, who wrote in al-Ahram on March 16, 1962, that

> the more the independent strength of the UAR [United Arab Republic, which included Egypt and Syria] grows, the less will be the proportion that has to be devoted to meeting the Israeli danger. The opposite is the case on the other side of the barricade; the more the power of the UAR grows, the greater is the effort that Israel will have to make (cited in Harkabi, 1972, p. 88).

Nasser, too, exuded confidence in Egyptian resilience when he said that "the present and the future do not work in her [Israel's] favour but in favour of the Arabs" (Harkabi, 1972, p. 88).

The Israeli-Egyptian cycle of violence ended after the 1973 Yom Kippur War as a result of a mutual adjustment in the parties' perception of their relative power. Although victorious in yet another war, Israel came to realize that repeated defeats of Egypt could not guarantee an end to the conflict. Egypt, in effect, was indefatigable.

Why did this realization take so long? Perhaps because Israel's key leaders over the years had claimed that only repeated demonstrations of Israeli military might would bring the Arabs to the negotiation table. Ben Gurion, for example,

> concluded that there was no chance of reconciliation until Israel's strength and stability become so manifest that the Arab states would reconcile themselves to our permanence. In the meantime, he had not thought it wise to invest very deeply in contact throughout the Arab world" (Eban, 1977, p. 306).

Curiously, though, this view did not prevent Ben Gurion from being magnanimous after the display of Israeli military prowess, as we showed in the case of the 1948 war.

The human and economic cost imposed on Israel by the 1973 war--coupled with her isolation, her evident dependence on the United States, and the success of the Arab oil embargo--brought about a "rude awakening from a sweet but unreal dream" (Yaniv, 1987, p. 188). On the Egyptian side, Anwar Sadat's perception that Israel was ready to acknowledge Arab moving power allowed him to approach the Israelis on an equal footing--despite the defeat of his military forces in the Yom Kippur War, which were saved from disaster only by United States intervention. In the end, then, moving power overrode military superiority, prompting a joint recognition by the players that only Magnanimity could save them from themselves.

6. Conclusions

We began by discussing two contending schools of thought on how a victor should treat a defeated party after a war or other major dispute. Instead of taking sides in this controversy, we derived conditions, based on two-sided analysis, under which magnanimity or nonmagnanimity by the victor, and cooperation or noncooperation by the defeated party, are rational.

Our analysis of MG demonstrated that all four outcomes of this game may be rational, depending on the preferences of the players. Thus, sticking with the Status Quo is never rational when this outcome is the worst for the defeated party, but it is always rational when this outcome is the defeated party's next-best. Magnanimity is rational in some games, including Prisoners' Dilemma, in which the Nash equilibrium of the 2 x 2 game is Pareto-inferior. Noncooperation by the defeated party is rational in still other games, including Chicken and a pure-conflict game, with the resulting outcome either Rejected Status Quo or Rejected Magnanimity.

These results assume that the players, starting at Status Quo, are nonmyopically rational in a game of sequential moves. Although these rules of play are unorthodox in game theory, we think that they are descriptive of how players, at the termination of a dispute in which there is a victor and a defeated party, might evaluate their options.

To be sure, incomplete information about an opponent's preferences may complicate their choices. If we presume that the players know their own preferences or type, however, then each player need rule out relatively few specific games (sometimes none for D) in order to make a rational choice. In other words, a player's misperception of an opponent is not necessarily a problem, provided it knows its own preferences.

Incomplete information about moving power may induce cycling. The defeated party benefits from such power, which induces Magnanimity in three games in which Status Quo would otherwise be chosen. We suggested that Egypt demonstrated this power in its 31-year conflict with Israel, despite the latter's military superiority.

Unfortunately for these players, it took five wars for them to realize that they both could benefit from Magnanimity rather than continued cycles of violence, to which their different capabilities had, perhaps unwittingly, led them. In the other wars and the one crisis (the Cuban missile crisis) that we examined, we found empirical evidence for the choice of other outcomes in MG, which we believe validates the applicability of our model.

We did not demonstrate in any rigorous manner that the conditions that lead to the different outcomes were met, which seems an important next empirical step to take. In addition, following Maoz (1984), we believe that a systematic sampling of wars and crises would aid in generalizing and extending our findings.

These findings might also be viewed normatively, at least insofar as they offer interpretable conditions for deciding a rational course of action after a war or a major crisis. Thus, for example, because all the rational outcomes in MG are Pareto optimal, our model may help decision makers avoid the Pareto-inferior Nash equilibria that occur in games like Prisoners' Dilemma (when played according to the rules of 2 x 2 games). Our model also highlights when information about an opponent is important, which might stimulate the search for such information when a rational choice depends on it.

To conclude, we believe our model helps explicate, in parsimonious fashion, the logic of strategic choices in postdispute situations. Because the players' choices in these situations critically affect the future stability of the international system, they need to be carefully thought through. Our model, we believe, aids in this task.

Notes

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[1]We defer until later in this section describing the rules of play of MG, which are not reflected in its 2 x 2 representation.

[2]The distinction between one-sided and two-sided analysis is not merely formal. It is rooted in fundamental assumptions about the nature of victory and defeat and their relationship. Thus, Carroll (1980) claims that victory has been commonly perceived as entailing the complete helplessness of the vanquished, who is left without a choice after its defeat. This perception reflects one-sided analysis, whereas two-sided analysis implies that the vanquished does have a choice at Status Quo--namely, to accept or reject it.

[3]The assumption of "no backtracking" is not necessary for the kind of analysis we shall do, but it eliminates a good deal of indeterminacy in the results. It implies that a player will not depart from an outcome only to be forced back, which seems a plausible assumption to make if the players have reasonably complete information about each other's capabilities. We shall, however, introduce an asymmetry in the capabilities of the players later by assuming that one player has "moving power."

[4]To be sure, there may be situations in which cycling is rational--for example, to demonstrate a player's "moving power" in sequential play (Brams, 1982, 1983, 1985)--whose possible effects we shall explore in section 4.

[5]Although (1) and (2) together are necessary and sufficient, they are not independent. In particular, when $v_s = v_2$, $d_j > d_{i+}$ of (2) implies $d_j > d_i$ of (1), which is why (2) is a more stringent set of conditions than (1) when the two sets are comparable.

[6]In fact, the 2 x 2 games in Figure 3 indicate only the different possible preference orderings that are consistent with MG. The games themselves are played according to the sequential rules of play given in section 2, starting at Status Quo.

[7]Of course, the path of play matters if the players accrue payoffs at "intermediate" outcomes. But in most of the applications to be discussed, the rational outcome (at which the process stabilizes) determines overwhelmingly the payoffs to the players.

[8]Recall that this assumption is inconsequential when moves are counterclockwise from Status Quo: if V moves initially to Magnanimity, and D subsequently to Rejected Magnanimity--which is a possible rational sequence in class 3 games if D does not move first--V will either stop at Rejected Magnanimity (in #10, #11, and #12) or, if it moves to Rejected Status Quo, D will not desire to complete the cycle (in #9).

[9]In #1, D would never move from Rejected Magnanimity, where it obtains its best (4) outcome (which is also true in #5 and #9-#12), even without the Rationality of No Cycling assumption. Recognizing this, V would not move from Rejected Status Quo to Rejected Magnanimity,

only to terminate at the latter outcome in #1. Because, in turn, Rejected Status Quo is worse for both players than Status Quo, neither player would depart from Status Quo in the first place. It is worth pointing out that #1 is strategically equivalent to #11 in Rapoport and Guyer (1966)--they are both #39--because interchanging their players transforms one game into the other. But they are different games in our classification scheme because the two players, who rank all outcomes except Magnanimity differently, are distinguishable. This difference illustrates an important point: the same 2 x 2 game, in which interchanging the players does not change its strategic structure, may give rise to different MG games. (The interchange of players in the other specific MG games does not create a new game that is also an MG game.)

[10]In its successful war against Austria five years earlier (1866), Prussia, by contrast, treated Austria much more leniently, as we shall see shortly.

[11]We stress that V's acknowledgment of D's moving power does not imply that V believes it will lose the next war but, instead, that this war will not be terminal. A failure to realize that the military superiority of V, and the moving power of D, are not inconsistent offers insight, we think, into why the United States became entrapped in Vietnam, and the Soviet Union in Afghanistan, for so long.

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