

# U.S.-SOVIET-CHINESE RELATIONS: ROUTINE, RECIPROCITY, OR RATIONAL EXPECTATIONS?

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*International relations theorists disagree about whether great power behaviors reflect bureaucratic routine or reciprocity. Recently, some have suggested that these behaviors result from great powers' rational expectations rather than from simple routine or reciprocity. The debate is flawed in several respects. The quasi-experimental studies of great power behavior suffer from specification and measurement errors. Furthermore, most studies of great power behavior focus exclusively on the superpowers, without adequately appreciating China's role in world politics. We present an improved analysis that recognizes the potential effects of Chinese behavior and ameliorates the methodological flaws in existing work. The results indicate that the behaviors of the United States, the Soviet Union, and China are a relatively stable* mix *of bureaucratic routine and reciprocity. The results also indicate complex, asymmetrical connections among U.S.-Soviet, U.S.-Chinese, and Soviet-Chinese relations, consistent with the notion of a strategic triangle.*

To what extent and how do great powers respond to each other's behavior? This question lies at the heart of much writing and thinking about international politics. Yet, surprisingly, we still do not have a definitive answer to it. One body of work argues that great powers' behaviors are an outgrowth of bureaucratic routine—that great powers are insensitive to the behavior of other countries. Another body of work maintains that great powers not only respond to the behavior of other powers but reciprocate the behaviors directed toward them. This reciprocity is presumed by some theorists to provide the basis for the evolution of international cooperation (see Axelrod 1984; Axelrod and Keohane 1985; Gowa 1986; Huth 1988; Jensen 1986; Jervis 1981; Keohane 1986; Larson 1988; Leng and Wheeler 1979; Makins 1985; Oye 1986; Stoll and McAndrew 1986).

Quasi-experimental studies of reciprocity have produced contradictory findings. Some researchers claim to find widespread evidence of reciprocity as an international norm; others find evidence of bureaucratic momentum and a complete lack of reciprocity; and still others find reciprocity only in certain countries at certain times (see Zinnes 1980).

Recently, a group of scholars has suggested that great powers respond not to the actual behaviors of other powers but to rational expectations of others' future policies or to departures from these expected policies. Because great powers have rational expectations, reciprocity is not immediately evident as a lagged response to another country's past actions

but only as a response to surprises in other countries' behaviors (McGinnis and Williams 1989a, 1989b; Williams and McGinnis 1988). Unfortunately, rational expectations theorists also obtain contradictory empirical results regarding the nature of great power behavior.

We shall critically evaluate this debte about the nature of great power politics and provide a sound answer to the questions of whether and how great power behavior reflects bureaucratic routine or reciprocity. We show that the existing research on great power behavior is flawed in that it fails to appreciate China's relations with the superpowers and it suffers from specification and measurement errors. We construct an improved quasi experiment that includes Chinese behavior and ameliorates these methodological problems. The results of our analysis indicate that great power behavior combines both bureaucratic routine and reciprocity. Our results also reveal complex, asymmetrical connections among U.S.-Soviet, U.S.-Chinese, and Soviet-Chinese relations—connections that imply the existence of a strategic triangle. The workings of the triangle differ somewhat from earlier descriptions (e.g., Starr 1982) but are largely consistent with the Kissingerian notion that U.S.-Soviet détente, U.S.-Chinese rapprochement, and Sino-Soviet enmity are coordinated and self-reinforcing (Talbott 1981, 84).

The discussion is divided into four parts. First, we briefly review the quasi-experimental literature on the issue of bureaucratic momentum versus reciprocity. This review shows the need for a new approach that recognizes the causes and consequences of Chinese behavior, bases causal inference on a weakly restricted model of U.S.-Soviet-Chinese relations, and employs multiple, temporally disaggregated time series for great power behavior. We present such an approach by developing a multiequation model for Sino-Soviet-U.S. relations and assembling three sets of events time series on these countries' behaviors. We then present the results of our analysis and briefly sketch some theoretical implications of the results.

## Reciprocity and Reality: A Short Review

The quasi-experimental studies of great power politics can be divided into three groups, depending on the indicator of behavior they employ; there are conflicting results regarding bureaucratic routine and reciprocity in each case.

The first and most extensive set of investigations focuses on *military spending* patterns. These studies attempt to determine whether the superpowers increase (decrease) their military spending in response to increases (decreases) in spending by the adversary. Many of these studies conclude that superpower military spending shows no evidence of reciprocity. Rather, military spending is an outgrowth of bureaucratic routine and other purely internal factors (see the reviews in Cusack and Ward 1981 and Ostrom and Marra 1986).

Recently, several researchers have proposed a new explanation for the apparent lack of reciprocity in military spending. These scholars argue that reciprocity is not evident because countries respond not to the actual spending levels of their adversary but only to *errors* in expected spending levels. For example, Williams and McGinnis (1988) contend that superpower behavior is a function of expected cost ($C_t$), expected threat ($T_t$), and the information that countries have about the international system ($Z_t$). Formally, superpower foreign policy behavior ($FP_t$) can be written as $FP_t = f(C_t, T_t; Z_t)$ where $C_t = g(Z_t)$ and $T_t = h(Z_t)$. Assuming that $f$ is a simple linear additive function and that expected costs and threats

are calculated according to the identities $C_t = C_{t-1} + u_t$ and $T_t = T_{t-1} + v_t$, where $u_t$ and $v_t$ are unexpected shocks or innovations in costs and threats, it follows that superpower behavior will *appear* to be a random walk: $FP_t = FP_{t-1} + e_t$, where $e_t = (u_t + v_t)$. Then, since superpowers obtain and efficiently process essentially the same information, they can form unbiased forecasts of each other's behavior. In turn, only the error terms (surprises) will be correlated. Williams and McGinnis' analysis of annual estimates of superpower military spending indeed fits this pattern: each superpower's spending is approximately a random walk, and the residuals of their equations are correlated at about .60.[1]

Rational expectations theorists also have addressed the questions of whether and how superpowers reciprocate each other's cooperative or hostile initiatives. In their framework, a cooperative initiative is essentially an unexpected or surprise act of cooperation on the part of one country toward another. It is defined, operationally, as the residuals from the respective equations in the fitted models for U.S.-Soviet relations. The correlation between these residuals presumably indicates the tendency of countries to take, and/or respond to, such initiatives simultaneously. The response of the fitted models to a hypothetical but historically grounded (estimated) residual shock indicates the likely effect that a surprise policy initiative will have on the two countries' behaviors. In these ways, the rational expectations framework allows researchers to conduct more realistic simulations of the effects of superpower policy initiatives than the more familiar "reactive linkage" framework (see McGinnis and Williams 1989a).

Unfortunately, these new studies also produce somewhat contradictory results. For instance, Majeski (1985) found that only the United States forms and employs current expectations of its adversary's military expenditures; the Soviet Union's spending pattern is not responsive to any current expectation of U.S. spending. Williams and McGinnis' (1988) findings, on the other hand, imply that both the United States and the Soviet Union respond to current expectations. Williams and McGinnis also show that both countries respond in the same way to contemporaneous shocks—positive, expectational errors in spending—by increasing spending in response to a shared positive surge of spending by both countries.

A second cluster of studies of superpower reciprocity focuses on patterns of *events* rather than of military spending. These studies analyze the causal links among countries' cooperative or hostile behaviors toward each other. For instance, using a Richardson-type model of behavior and annual events data from the Conflict and Peace Data Bank (COPDAB), Ward (1982) finds evidence of both bureaucratic routine (self-driven behavior) and reciprocity. The Soviet Union appears to react more strongly to U.S. behavior than does the United States to Soviet Behavior.[2] Other studies of events data reach similar conclusions about U.S.-Soviet relations (Starr 1982, 236; Thompson and Rapkin 1982). However, in a follow-up study, Rajmaira and Ward (1988) obtained contradictory results. Their application of somewhat more sophisticated least squares estimation techniques to quarterly events data turned up little evidence of direct reciprocity. The only exception was the seemingly reciprocal responses of the United States and the Soviet Union to *hostile* acts directed toward one another.

A third set of investigations focuses on the links between military spending and event patterns. These studies are motivated by the realization that responses to defense spending policies may take many forms (Most and Starr 1984) and by the idea that policymakers' perceptions or expectations may be altered in the face of

cooperative or hostile acts by an adversary (see, e.g., McGinnis and Williams 1986, 1989a). Once more, the results are contradictory. For example, in studying the influence of relative military forces on superpower defense spending, Ward (1984, 306, 308) finds that the United States responds reciprocally to Soviet behavior while the Soviets increase (decrease) military spending *inversely* in response to cooperative (hostile) acts by the United States. But McGinnis and Williams (1986) find no direct relationship between the hostile behavior of the superpowers and defense spending patterns. In a recent follow-up study, McGinnis and Williams (1989a) continue to find few *direct* relationships between superpower spending levels and superpower hostility. But they again find high contemporaneous correlations between shocks in the corresponding variables as well as some mutually reciprocal responses to these shocks and therefore conclude that the superpowers employ rational expectations.[3]

In sum, existing studies produce three competing propositions about great power relations:

1. *Routine.* Great powers' behaviors are essentially self-driven by bureaucratic routine and other internal factors. Great powers do not respond to the actions of other great powers.
2. *Rational Expectations.* Great powers' behaviors only appear to be self-driven but actually reflect rational expectations about other powers' behaviors. Great powers react to (or mutually take) unexpected policy innovations in ways that connote reciprocity.
3. *Reciprocity.* Great powers' behaviors respond, in some part, in kind to the actions of other countries. Note that great powers' behaviors may be partly self-driven and partly reciprocal, reflecting a mix of routine and reciprocity.

## Critique

The debate over bureaucratic momentum versus reciprocity is flawed both substantively and methodologically. Substantively, the great majority of studies seek to resolve the controversy by analyzing patterns of U.S. and Soviet behaviors alone, ignoring the potential role of a third key great power, China. This omission may seriously bias the results of the studies.

China's status as a great power is undisputed; that China's behavior at times influences the behavior of the superpowers is well recognized. Only China shares with the superpowers the combination of vast territory, very large populations and military forces, nuclear weapons, great regional clout, and messianic ideologies (Robinson 1987, 4). There is evidence that China, rather than the United States, poses the chief security threat to the Soviet Union in the minds of both Soviet policy makers and Soviet international relations scholars (Lynch 1987, xix). While U.S. policymakers, for their part, show greater concern about the Soviet Union than China, in the Cold War era they were deeply preoccupied with the conflict areas around China's borders (Korea, Vietnam, and others) in addition to the East–West standoff in Europe. Finally, while other great powers such as France, Britain, Germany, and Japan have played relatively constant roles in East–West relations, China has shifted its relations with the superpowers dramatically over time, repeatedly demonstrating an independent foreign policy.

Arguments explicitly connecting the state of superpower relations with Chinese behavior are frequently made by scholars and policymakers. For example, Dittmer (1981) explains U.S.–Soviet relations in part in terms of a three-person game among the United States, the Soviet Union, and China. And Bull argues that a "concert of great powers in our time"

depends on the strengthening of U.S.-Soviet detente "and its extension to include China" (1977, 298). Policymakers in the Carter administration worried that U.S. arms sales to China would lead, by way of increased Soviet-Chinese tensions, to a "fundamental reassessment" of Soviet behavior toward the United States, stiffening Soviet positions on SALT negotiations (*New York Times*, 24 June 1977; on actual Soviet reactions to U.S.-China improvements in 1972 and 1978, see Garthoff 1985, 240, 710). The view that U.S. support for China could provoke Soviet hostility toward the United States also surfaced among U.S. officials in the 1960s (Segal 1982) and the 1980s (Friedberg 1983, 141). Likewise, Sino-Soviet relations have reportedly been sensitive to developments in U.S.-Soviet relations both in the mid-1960s (Segal 1982, 91) and the 1980s (Dittmer 1987, 42).

The few quasi experiments that include Chinese behavior suggest that great power relations have become increasingly triangular in nature. Starr's (1982) analysis is illustrative. Using monthly events data for 1971-79 and correlational and multiple regression techniques, Starr finds several triangular relationships among U.S., Soviet, and Chinese behaviors. For example, he finds that during the Carter administration hostile acts by the Chinese toward the United States were correlated with cooperative acts by the United States toward the Soviet Union (see also Cusack and Ward 1981). For all these reasons a thorough analysis of great power routine and reciprocity should include China, not just the superpowers. The existing literature is substantively flawed by the frequent omission of China.

This literature is flawed methodologically as well.[4] First, it suffers from specification error—notably, omitted variables. The failure to include variables for behavior by and toward China in equations for U.S. and Soviet behavior may render regression estimates biased and inconsistent. Omitted variable bias plagues existing studies in another way when researchers misspecify the lag length on their right-hand-side variables. In such circumstances, the equations for U.S. and Soviet behaviors may contain an incorrect or insufficient number of lagged values of the variables.[5] There simply is no consensus about the correct lag lengths for these equations or about the appropriate set of equation restrictions generally. Yet the equations must be correctly specified or inaccurate inferences may be drawn about the existence of bureaucratic routine or international reciprocity in great power behavior. Such concerns about specification error suggest the need for weakly restricted models that include variables for Chinese behaviors and also a relatively large number of lags for behavioral processes (see Freeman, Williams, and Lin 1989).

Second, existing studies suffer from measurement error. The data base for many of them is highly aggregated in a temporal sense. Temporal aggregation tends to mask causal relationships. For example, temporal aggregation can transform one-way causal relationships into feedback (reciprocal) relationships; and it increases the importance of instantaneous feedback or contemporaneous correlation—the main indicator of mutual responsiveness according to the rational expectations school. The implication is that some of the results mentioned above may be flawed by the use of annual data —data that span the true or natural time unit of countries' policymaking processes and hence confound causal inferences. If more disaggregated data were used, we would obtain more accurate and consistent results about great power behaviors.[6]

Of course, military spending data normally are available only on an annual basis. Events data, on the other hand, can be disaggregated to monthly levels. This allows us to address the inferential problems mentioned above. With events data

we can, for example, resolve the inconsistencies between the results obtained by Starr (1982) and Rajmaira and Ward (1988).[7] Finally, the general quality of events data (Achen 1987) requires the use of *multiple* indicators of behaviors. We need more than one (temporally disaggregated) time series to gauge the reliability of our results.

To resolve the debate about bureaucratic routine and reciprocity in great power relations, then, we must construct an improved quasi experiment that ameliorates the specification and measurement errors in existing research.

## Research Design

### Model and Method

We used the vector autoregressive (VAR) approach to test the three propositions.[8] This approach addresses the problem of specification uncertainty, and it also yields insights into the effects of (unexpected) cooperative initiatives by the United States, the Soviet Union, and China. The VAR model is a multiequation, reduced form in which each country's recent past behaviors toward the others are included in each equation. Our model has six equations—one for each country's behavior toward each of the other two—with the same six variables on the right-hand side of each equation:

$$US_t = \alpha_{10} + \Sigma\,\alpha_{11i}US_{t-i} + \Sigma\,\alpha_{12i}UC_{t-i} + \Sigma\,\alpha_{13i}SU_{t-i} + \Sigma\,\alpha_{14i}SC_{t-i} + \Sigma\,\alpha_{15i}CU_{t-i} + \Sigma\,\alpha_{16i}CS_{t-i} + e_1 \quad (1)$$

$$UC_t = \alpha_{20} + \Sigma\,\alpha_{21i}US_{t-i} + \Sigma\,\alpha_{22i}UC_{t-i} + \Sigma\,\alpha_{23i}SU_{t-i} + \Sigma\,\alpha_{24i}SC_{t-i} + \Sigma\,\alpha_{25i}CU_{t-i} + \Sigma\,\alpha_{26i}CS_{t-i} + e_2 \quad (2)$$

$$SU_t = \alpha_{30} + \Sigma\,\alpha_{31i}US_{t-i} + \Sigma\,\alpha_{32i}UC_{t-i} + \Sigma\,\alpha_{33i}SU_{t-i} + \Sigma\,\alpha_{34i}SC_{t-i} + \Sigma\,\alpha_{35i}CU_{t-i} + \Sigma\,\alpha_{36i}CS_{t-i} + e_3 \quad (3)$$

$$SC_t = \alpha_{40} + \Sigma\,\alpha_{41i}US_{t-i} + \Sigma\,\alpha_{42i}UC_{t-i} + \Sigma\,\alpha_{43i}SU_{t-i} + \Sigma\,\alpha_{44i}SC_{t-i} + \Sigma\,\alpha_{45i}CU_{t-i} + \Sigma\,\alpha_{46i}CS_{t-i} + e_4 \quad (4)$$

$$CU_t = \alpha_{50} + \Sigma\,\alpha_{51i}US_{t-i} + \Sigma\,\alpha_{52i}UC_{t-i} + \Sigma\,\alpha_{53i}SU_{t-i} + \Sigma\,\alpha_{54i}SC_{t-i} + \Sigma\,\alpha_{55i}CU_{t-i} + \Sigma\,\alpha_{56i}CS_{t-i} + e_5 \quad (5)$$

$$CS_t = \alpha_{60} + \Sigma\,\alpha_{61i}US_{t-i} + \Sigma\,\alpha_{62i}UC_{t-i} + \Sigma\,\alpha_{63i}SU_{t-i} + \Sigma\,\alpha_{64i}SC_{t-i} + \Sigma\,\alpha_{65i}CU_{t-i} + \Sigma\,\alpha_{66i}CS_{t-i} + e_6 \quad (6)$$

$US_t$ represents behavior by the United States toward the Soviet Union at time $t$, $UC_t$ represents behavior by the United States toward China at time $t$, $SU_t$ represents Soviet behavior toward the United States at time $t$, and so forth. The $\alpha$'s are coefficients of particular variables in each equation; the summations are for $i = 1, \ldots L$, where $L$ is the number of lags of the right-hand-side variables in each equation. The $e$'s are error terms. As described below, the lag lengths of the right-hand-side variables in the VAR model are chosen through an analysis of the data rather than imposed a priori.

Tests of hypotheses are based on the now-familiar notion of Granger causality (Freeman 1983; see also Majeski and Jones 1981), the contemporaneous correlation of residuals from the fitted model (McGinnis and Williams 1989a; Williams and McGinnis 1988), and the response of the fitted model to an unexpected shock in one of the variables corresponding to the positive, one-standard-deviation, orthogonalized value of the respective resid-

uals (Freeman, Williams and Lin 1989; Williams and McGinnis 1988). This last part of the statistical analysis amounts to a realistic evaluation of the effects of hypothetical surprise increases in the level of net cooperation of one country toward another. The realism derives from the fact that the magnitudes of these cooperative initiatives are based on the actual values of the corresponding residuals of the fitted model.[9]

The competing claims about the causal connections among the behaviors of great powers (or lack thereof) can be represented in the following way. The first proposition, that the behaviors of the three countries are purely self-driven by bureaucratic routine and other internal factors, implies that the coefficients on all but the endogenous right-hand-side variable of the corresponding equation are jointly zero—e.g., that in equation 1 for U.S. behavior toward the Soviet Union, $\Sigma\ \alpha_{12i} = \Sigma\ \alpha_{13i} = \Sigma\ \alpha_{14i} = \Sigma\ \alpha_{15i} = \Sigma\ \alpha_{16i} = 0$ (where summation across $i$ denotes the lagged terms for each right-hand-side variable in the equation).

The second proposition, that the three countries' behaviors are outgrowths of rational expectations, implies that because the three countries all have rational expectations, their behaviors are random walks. But this second proposition, unlike the first, implies that shocks (surprises) in countries' behaviors toward one another —the residuals from the six equations— are highly intercorrelated. And reciprocity will be found in the sense that a (simulated) unexpected positive surge of cooperation in the policies of one country toward another produces a cooperative response toward it by the latter.

The third proposition suggests that in addition to the possibility that some of the coefficients on the right-hand-side endogenous variables are nonzero ("routine"), there are also nonzero coefficients on response variables, indicating direct bilateral response, or perhaps triangular response(s). In the $US_t$ equation, for instance, the coefficients $\alpha_{13i}$ might be nonzero, indicating bilateral response of the United States toward the Soviet Union; and/or the $\alpha_{14i}$, $\alpha_{15i}$, or $\alpha_{16i}$ coefficients might be nonzero, suggesting triangular response(s). Like the second proposition, the third proposition implies that countries react in kind to a surprise act of cooperation toward them and perhaps toward other countries.

## Data

In order to counteract measurement error, we assembled three events data sets. The first data set, Azar's (1980) COPDAB, contains 9,072 events for the U.S.-Soviet, U.S.-Chinese, and Soviet-Chinese dyads for 1948–78. The second, McClelland's (1971) extended World Events Interaction Survey (WEIS) contains 9,828 events for the three dyads; it covers the period 1966–86 (extended data for 1980–86 were generously shared by Charles McClelland). The third data set, Ashley's (1980) U.S.-Soviet-China events data (ASHLEY), contains 14,397 events for the three dyads for 1950–72.

Each data set was transformed into six monthly time series—one for each country's behavior toward each of the other two—representing levels of net cooperation (weighted cooperation minus weighted hostility). Each monthly data point was the weighted sum of actions taken by one country toward another during the month, with each action weighted according to the amount of cooperation or hostility implicit in the category of action taken. The presumption here is that policymakers think in terms of monthly aggregations of events and that in so doing they weigh the relative balance of cooperative and hostile actions that a country has taken.[10]

Our net cooperation time series are displayed graphically and discussed at length elsewhere (Goldstein and Freeman 1990,

36–66). Suffice it to say that the time series capture conventional wisdom about the ebb and flow of relations among the United States, the Soviet Union, and China. For example, the U.S.–Soviet data indicate that relations were particularly hostile in the first years after 1948 (Berlin, Korea), the early 1960s (U-2, Cuba), and the early 1980s (the "second Cold War"), while relations were most cooperative in the early 1970s (détente). As regards U.S.–Chinese relations, the data show persistent hostility with intermittent crises from 1949 through the 1960s, with particularly hostile periods around the Korean and Vietnam Wars. In the 1970s these relations became more cooperative. Meanwhile, Sino–Soviet relations appear consistently cooperative in the 1950s (Sino–Soviet alliance), then turn hostile in the 1960s (culminating in the border fighting of 1969), and gradually stabilize at a modest level of hostility in the 1970s and early 1980s. The face validity of the raw data (i.e., their consistency with conventional accounts of the trends and turning points in U.S.–Soviet–Chinese relations) increases our confidence that the data capture the essence of great power politics in the 1948–86 period.

Two criticisms might nonetheless be leveled at our measurement strategy. The first is that policymakers do not weigh cooperative and hostile acts together but rather treat them in fundamentally different ways, reacting mainly to *hostile* events (McGinnis and Williams 1989a; Rajmaira and Ward 1988). Recognizing this possibility, we also analyzed a set of COPDAB time series constructed from hostile events only. As reported below, we obtained essentially the same results in this ancillary analysis as for our analyses of the net cooperation time series. A second criticism derives from the nature of events data, which are thought to be unduly "noisy." Coding and weighting of reported events from the press gives only a rough approximation of countries' behaviors. The monthly movements in countries' measured behaviors may well contain random fluctuations. Statistical analyses of such data accordingly will be biased *against* finding causal links between one country's behavior and the prior behavior of another country. In our case, the use of events data biases our analyses toward confirming propositions 1 and 2 while disconfirming proposition 3; that is, our measurement strategy creates a very stringent test of the third proposition—a test that makes it difficult to find much evidence of direct reciprocity between great powers because events data are so noisy. Nonetheless, in fact, our results support the third proposition. So our findings cannot be criticized on the grounds of these data problems.

### Model Calibration and Evaluation

In calibrating our model we were sensitive to the fact that the nature of Sino–Soviet–U.S. relations may have changed at various times over the last forty years as a consequence, for example, of leadership changes in the three countries. The coefficients of the model in equations 1–6 therefore may take on different values in different historical eras.[11] In addition, the three teams that coded the data sets may have emphasized different characteristics of the three countries' policymaking processes; and as a result the lag structures of the statistical models for the three data sets might be different.

With both these considerations in mind, we analyzed the three data sets with respect to lag length and temporal stability. A modified likelihood ratio statistic was used for both purposes.[12] Analysis of the time frame of response processes showed that six, three, and two monthly lags were needed for the models with COPDAB, WEIS, and ASHLEY time series, respectively; that is, the great powers' past behaviors affect subsequent behaviors for no more than two to six

months (see Goldstein and Freeman 1990, 71, 168). This again suggests that many existing studies are in error in using *annual* data aggregations (see Freeman 1990; Goldstein n.d.). These results also suggest that relevant lags of right-hand-side variables have been omitted from the models (such as Starr's [1982]) that include only a single lag of monthly measures.

As for the temporal stability of Sino–Soviet–U.S. relations, many possible periodizations and "break points" have been proposed by students of great power politics. Most of these are defined by leadership regimes in each country and major international incidents in which great powers were involved. We examined the stability of our models across all U.S. and Soviet leadership transitions and across several key Chinese and international episodes. The results of these stability tests suggest three break points at which patterns of behavior among the three countries changed: the early 1950s, the late 1960s, and the early 1980s. We based our analysis for each data set on the longest period of overall stability of coefficients. In the COPDAB analysis, the instability of the late 1960s appeared to be only temporary, with no permanent, significant change of coefficients; hence, we analyzed the period of overall stability from April 1953 to December 1978 (309 months). The WEIS analysis indicated break points around July 1969 and November 1982, so we analyzed July 1969 to October 1982 (160 months). The ASHLEY analysis indicated break points around July 1955 and January 1969; we analyzed July 1955 to December 1968 (162 months). We will refer to the statistical representations of each of these periods as the COPDAB (1953–78), WEIS (1969–82), and ASHLEY (1955–68) models, respectively.[13]

Thus, our analysis was based on weakly, but appropriately, specified models in terms of both lagged terms and stable coefficients. Again, our goal was to determine which of the theoretical propositions—routine, rational expectations, or reciprocity—best describes great power relations for all three models, each model being based on relatively independent measures of great power behaviors.[14]

## Results

The results of the *F*-tests for the three models are reported in Table 1. They show considerable evidence of bureaucratic routine and provide support in certain instances for rational expectations theorists' claim that great power behaviors approximate random walks. There is also compelling evidence, however, that great powers respond to the behaviors of other great powers.

Consider, first, bilateral responses—the tendency for one country's behavior toward another country to depend on the other country's prior behavior toward it. There are six possible bilateral responses among the three countries. In the COPDAB model, four of the six bilateral relations are statistically significant at the .05 level; in the WEIS model three of the six bilateral relations are statistically significant at the .05 level, and a fourth relationship is statistically significant at the .10 level; and in the ASHLEY model two of the six relations are statistically significant at the .05 level, and a third is statistically significant at the .10 level. Figure 1 summarizes these results.

In addition, there is evidence of triangular responses, but interestingly only for the Sino–Soviet dyad. As in Starr's (1982) analysis, actions by and toward the United States affect Soviet and Chinese behavior toward each other. Of the many possible triangular influences, those affecting Sino–Soviet relations accounted for almost all the significant triangular effects in the three models (see Figure 2).

These results contradict the first and second propositions. They imply quite

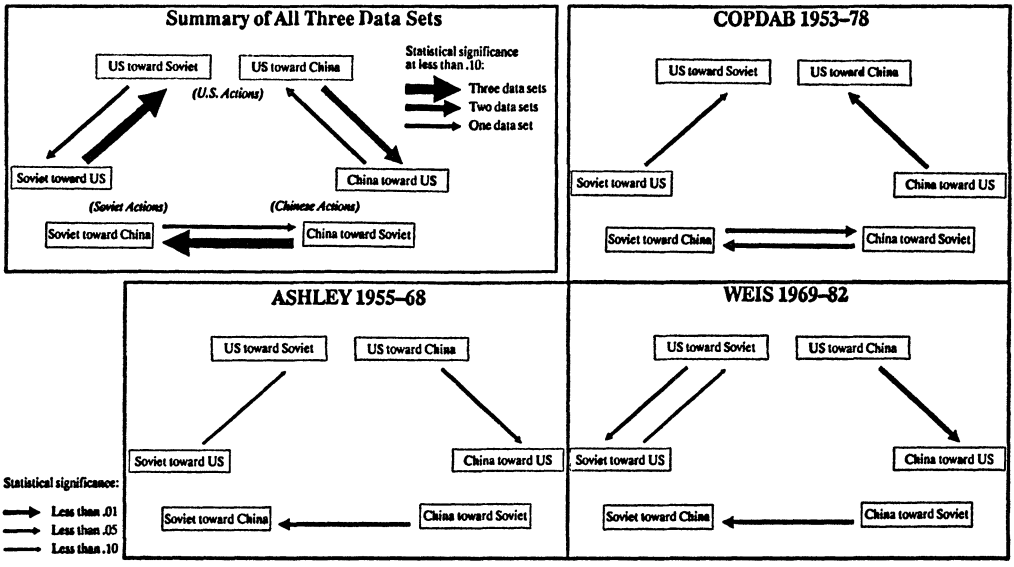
**Table 1. Tests for Direct Causal Connections among Behaviors of the United States, the Soviet Union, and China**

| Variable | | COPDAB (1953–78) | | WEIS (1969–82) | | ASHLEY (1955–68) | |
|---|---|---|---|---|---|---|---|
| Dependent | Independent | *F*-Statistic | Significance | *F*-Statistic | Significance | *F*-Statistic | Significance |
| United States/ Soviet Union (US) | US | 6.00 | .001*** | 2.95 | .035* | 5.18 | .007** |
| | UC | 1.28 | .265 | 2.96 | .035* | .64 | .528 |
| | SU | 2.73 | .014* | 2.24 | .087† | 2.51 | .085† |
| | SC | .29 | .940 | 1.86 | .140 | .18 | .838 |
| | CU | .98 | .441 | 2.02 | .114 | .43 | .651 |
| | CS | .89 | .504 | .67 | .569 | .49 | .613 |
| United States/ China (UC) | US | .72 | .636 | .37 | .774 | .04 | .956 |
| | UC | 3.10 | .006** | 1.13 | .340 | 4.28 | .016* |
| | SU | 2.40 | .029* | 2.11 | .102* | .88 | .417 |
| | SC | 1.28 | .265 | 1.76 | .157 | 2.06 | .131 |
| | CU | 2.89 | .010** | .52 | .671 | .12 | .891 |
| | CS | 1.02 | .415 | .43 | .729 | .54 | .582 |
| Soviet Union/ United States (SU) | US | 1.05 | .396 | 3.52 | .017* | .51 | .600 |
| | UC | .60 | .729 | 2.14 | .098† | .02 | .981 |
| | SU | 10.66 | .001*** | 2.07 | .107 | 6.90 | .002** |
| | SC | 1.52 | .173 | .13 | .945 | .41 | .662 |
| | CU | .57 | .751 | .79 | .503 | .64 | .528 |
| | CS | .97 | .445 | .79 | .499 | .47 | .627 |
| Soviet Union/ China (SC) | US | 2.13 | .050† | .36 | .780 | 4.95 | .008** |
| | UC | 1.56 | .158 | .33 | .801 | 1.85 | .161 |
| | SU | .96 | .451 | 2.52 | .061† | 1.39 | .253 |
| | SC | 5.33 | .001*** | 2.72 | .047* | 4.26 | .016* |
| | CU | 1.07 | .383 | 3.77 | .012* | 3.19 | .044* |
| | CS | 3.77 | .002** | 3.95 | .010** | 5.81 | .004** |
| China/United States (CU) | US | .46 | .836 | 1.87 | .138 | .24 | .788 |
| | UC | .53 | .782 | 4.73 | .004** | 4.09 | .019* |
| | SU | 1.37 | .227 | 1.72 | .166 | .17 | .844 |
| | SC | .96 | .452 | 1.02 | .385 | 1.19 | .308 |
| | CU | 12.54 | .001*** | 7.43 | .001*** | 5.89 | .003** |
| | CS | .59 | .737 | .90 | .444 | .15 | .861 |
| China/Soviet Union (CS) | US | 2.46 | .025* | 1.69 | .172 | 5.33 | .006** |
| | UC | .64 | .697 | .68 | .565 | 1.54 | .217 |
| | SU | 1.05 | .392 | 4.92 | .003** | 2.58 | .079† |
| | SC | 4.04 | .001*** | .51 | .673 | .33 | .716** |
| | CU | 1.94 | .074† | 1.68 | .175 | .39 | .678 |
| | CS | 4.02 | .001*** | 2.97 | .034* | 4.56 | .012* |
| Number of cases | | 303 | | 157 | | 160 | |

*Note:* *F*-statistics test relationship between lags of independent variable and unlagged dependent variable. Variable names represent behavior of country denoted by first letter toward country denoted by second letter (e.g., UC means United States behavior toward China). Statistical significance levels for *F*-statistics are shown; levels *below* .001 are listed as .001 (.001–.0025 listed as .002).

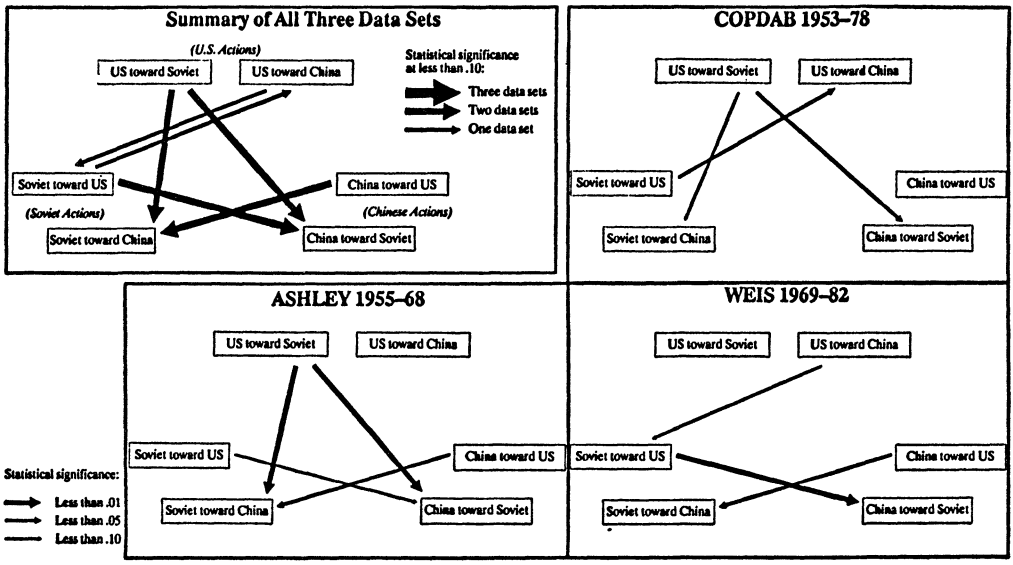
†$p < .10$.
*$p < .05$.
**$p < .01$.
***$p < .001$.

## Figure 1. Results for Bilateral Direct Causal Connections among Great Power Behaviors in Three VAR Models




*Note:* Arrows indicate statistically significant relationships between lags of independent variables and unlagged dependent variables in model. Arrows thus indicate direction of causality (pointing toward responding country).

## Figure 2. Results for Triangular Direct Causal Connections among Great Power Behaviors in Three VAR Models




*Note:* Arrows indicate statistically significant relationships between lags of independent variables and unlagged dependent variables in model. Arrows thus indicate direction of causality (pointing toward responding country).

**Table 2. Correlation Matrices for Residuals from Three VAR Models of Great Power Relations**

| | COPDAB Oct. 1953–Dec. 1978 | | | | | WEIS Oct. 1969–Oct. 1982 | | | | | ASHLEY Sept. 1955–Dec. 1968 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UC | SU | SC | CU | CS | UC | SU | SC | CU | CS | UC | SU | SC | CU | CS |
| US | .05 | *.49* | -.09 | .07 | -.08 | -.15 | *.47* | .13 | -.13 | .03 | -.01 | *.66* | -.09 | .01 | -.05 |
| UC | — | .05 | .01 | *.26* | .07 | — | -.00 | -.02 | *.42* | .04 | — | -.04 | -.03 | *.26* | .06 |
| SU | — | — | -.06 | .12 | -.01 | — | — | -.01 | .12 | -.03 | — | — | -.03 | .08 | -.00 |
| SC | — | — | — | -.10 | *.78* | — | — | — | .00 | *.24* | — | — | — | -.01 | *.69* |
| CU | — | — | — | — | .08 | — | — | — | — | .20 | — | — | — | — | .03 |

*Note:* Row and column labels indicate equations from which residuals come, in VAR model connecting behaviors of United States, Soviet Union, and China. For example, the US/UC cell in the upper left contains the correlation of residuals from the equation for U.S. behavior toward the Soviet Union (US) with those from the equation for U.S. behavior toward China (UC). Residual correlations for each dyad (e.g., US with SU) are italicized.

strongly that great power behavior is not solely an outgrowth of bureaucratic routine or of other internal factors. Nor are the three countries' behaviors consistent with "idealized" or sophisticated rational expectations; U.S., Soviet, and Chinese behaviors do *not* appear to be random walks. Rather, each country reacts to the actions of at least one other country in a way that reflects a mix of routine and reciprocity.

Some support for the rational expectation theory is evident in the matrices of contemporaneous correlations (Table 2). The matrices show that in a bilateral sense, the "innovations" or shocks in the three countries' behaviors are correlated. For example, the residuals from the equations for $US_t$ and $SU_t$ are correlated at about .50 in all three data sets. But the residuals for the equations corresponding to triangular linkages in the behavior of the great powers are not highly correlated contemporaneously (even where lagged responses give significant *F*-tests). For instance, the residuals for the equations for U.S. behavior toward the Soviets ($US_t$) and for Soviet behavior toward China ($SC_t$) are correlated at only −.09, .13, and −.09 in the three data sets, respectively. Likewise, the residuals for the equations for $SU_t$ and $CS_t$ are correlated at less than −.03.

Our simulations of the effects of hypothetical shocks in the variables on the fitted VAR models for the strategic triangle also show much evidence of bilateral reciprocity. A positive surge in net cooperation from each country toward the other produces a reciprocal response in all six cases for the COPDAB model, all six cases for the WEIS model, and five of the six cases for the ASHLEY model. These results are clearly consistent with the notion that U.S.–Soviet–Chinese relations are governed by a norm of reciprocity.

The results of these simulations are more difficult to interpret with respect to triangular responses. Briefly, they affirm that Sino–Soviet behaviors are more triangular than behaviors involving the United States: in their actions toward each other, the Soviets and Chinese consistently take into account U.S. behavior. But this Sino–Soviet triangular response takes several forms. For the COPDAB and ASHLEY models, for example, surges of U.S. net cooperation toward the Soviets evoke Soviet and Chinese hostility toward one another. This is consistent with the notion that an outside threat increases dyadic cohesion. For the WEIS model a surge of net cooperation by the Soviets toward the United States evokes a hostile Chinese response toward the Soviets, and a surge of Chinese net coop-

**Table 3. Tests for Direct Causal Connections among Great Power Behaviors Using COPDAB Data Set, Hostile Events Only**

| Variable | | | |
|---|---|---|---|
| Dependent | Independent | *F*-Stat. | Signif. |
| US | US | 5.60 | .001*** |
| | UC | .80 | .571 |
| | SU | 3.31 | .004** |
| | SC | .58 | .749 |
| | CU | 1.58 | .152 |
| | CS | .90 | .496 |
| UC | US | .80 | .570 |
| | UC | 2.36 | .031* |
| | SU | 2.84 | .011* |
| | SC | .88 | .508 |
| | CU | 4.96 | .001*** |
| | CS | .51 | .802 |
| SU | US | 1.10 | .360 |
| | UC | 1.21 | .304 |
| | SU | 16.75 | .001*** |
| | SC | 1.13 | .346 |
| | CU | 1.40 | .214 |
| | CS | .67 | .674 |
| SC | US | 1.08 | .378 |
| | UC | .92 | .478 |
| | SU | .84 | .543 |
| | SC | 6.62 | .001*** |
| | CU | 1.43 | .204 |
| | CS | 5.10 | .001*** |
| CU | US | .68 | .667 |
| | UC | .30 | .938 |
| | SU | 1.36 | .232 |
| | SC | 2.44 | .026* |
| | CU | 13.00 | .001*** |
| | CS | 1.37 | .225 |
| CS | US | 2.19 | .045* |
| | UC | .43 | .860 |
| | SU | 1.75 | .110 |
| | SC | 6.02 | .001*** |
| | CU | 3.05 | .007** |
| | CS | 6.00 | .001*** |

†$p < .10$.
*$p < .05$.
**$p < .01$.
***$p < .001$.

*Note:* Format follows Table 1. Variable names indicate direction of behavior, e.g., SC indicates Soviet behavior toward China. Statistical significance of *F*-statistic indicates relationship between lags of independent variable and unlagged dependent variable. Significance levels *below* .001 are listed as .001; (.001–.0025 listed as .002). Residual correlations are between equations in which variables indicated are dependent variables. Number of cases = 303 (months). Below is the correlation matrix of residuals, following the format of Table 2.

| | UC | SU | SC | CU | CS |
|---|---|---|---|---|---|
| US | -.03 | *.44* | -.02 | .02 | .04 |
| UC | — | .08 | -.05 | .22 | .06 |
| SU | — | — | -.05 | .09 | -.01 |
| SC | — | — | — | -.03 | *.81* |
| CU | — | — | — | — | .13 |

eration toward the United States evokes a hostile Soviet response toward China. This is consistent with the notion that China and the Soviet Union punish each other for cooperating with the United States (or reward each other for hostility toward the United States). Most triangular responses in the WEIS simulation were opposite in nature to those in the COPDAB and ASHLEY models; this pattern suggests that the nature of triangularity (though not its asymmetry in terms of affecting the Sino–Soviet dyad) may have changed from the earlier period covered by COPDAB and ASHLEY to the later period covered by WEIS. This would not be surprising in view of the shift in China's alliances over these decades (more details on our analysis of triangularity can be found in Goldstein and Freeman 1990, 79–83).

Overall, our results are quite robust. In a COPDAB model based solely on hostile events (Table 3), we find essentially the same causal connections among the three countries' behaviors. We also obtain the same kinds of bilateral and triangular responses in simulations that employ a different ordering of our variables.[15]

## Implications

Our analysis places the study of great power politics on much stronger empirical footings. We have identified serious specification errors in previously published

research. We have shown that more than one monthly lag of variables must be included in models of great power relations and that temporally disaggregated (monthly rather than annual) measures reveal direct causal connections among the behaviors of the United States, the Soviet Union, and China. We have shown the importance of including behavior by and toward China in studies of great power politics and have identified an important asymmetry in the nature of the strategic triangle composed of the United States, the Soviet Union, and China. We also have shown that most existing studies employ incorrect periodizations of great power relations; the time frames of these studies span periods of structural instability. Hence, the coefficient estimates in these studies are most likely inaccurate. Our investigation, by contrast, is based on specifications that are much less likely to be in error; it covers time frames that by all indications are structurally stable. Our results are generally robust for three separate data sets on great power behavior and for a data set based on hostile behavior only. Our findings about the nature of great power politics are thus sounder than previously reported findings.

Our results are of substantive and theoretical importance. To begin with, they confirm the existence of a strategic triangle in which China plays a key great power role, especially in relation to the Soviet Union (see Lynch 1987; Robinson 1987; Starr 1982). However, our analysis shows, contrary to some works (e.g., Dittmer 1981), that this triangle is characterized by a distinctive asymmetry, in which only the Sino-Soviet dyad is directly affected by triangular influences. The continuity in this triangular asymmetry from the 1950s to the 1970s implies that the strategic triangle took form long before scholars and policymakers became preoccupied with it (see Kim 1987; Segal 1982).

Our results yield new insights about great power policy making. They clearly illuminate "reactive links" between the behaviors of the three countries—links that belie the notion that great power decisionmaking is purely self-driven by bureaucratic routine and related internal factors. The results provide some support for rational expectations theories insofar as they confirm that the innovations or shocks in the variables for U.S., Soviet, and Chinese (bilateral) relations are contemporaneously correlated. However, our findings also challenge these theories in revealing direct causal connections between the behaviors of the United States, the Soviet Union, and China (Table 1) and an absence of contemporaneous correlations of residuals across equations corresponding to triangular responses (Table 2).[16]

Our research identifies three "break points" at which patterns of great power behavior changed somewhat—the early 1950s, the late 1960s, and the early 1980s.[17] This periodization corresponds roughly with the three major interventionary wars of the Cold War era—Korea, Vietnam, and Afghanistan—and with the points of greatest hostility in the strategic triangle as a whole (see, e.g., the cold war cycles of Rostow 1987, 834). Interestingly, the periodization also roughly conforms to major Soviet leadership transitions: the death of Stalin in 1953, the ouster of Khrushchev in 1964, and the death of Brezhnev in 1982. And it corresponds with partisan shifts in the U.S. presidency, Republicans regaining control in 1953, 1969, and 1981.

Finally, our research defines an empirical battlefield for international relations theorists. For scholars who study international cooperation in terms of two-person prisoner's dilemma games, our results challenge the idea that great powers actually play simple tit-for-tat strategies. We have identified pervasive reciprocity among the United States, the

Soviet Union, and China, providing heartening news for those who view reciprocity as a key norm underlying the possibility of international cooperation. But we have also shown that reciprocity operates in a more complex environment than most theorists realize, an environment with considerable bureaucratic routine as well as asymmetrical triangularity. Great powers appear to employ strategies that mix routine and reciprocity while responding, in some cases, to the behavior of third parties.

Our investigation also poses challenges for theorists who represent great power relations in terms of other kinds of games and models (e.g., Snidal 1985; Wagner 1983). A valid game-theoretic model of great power politics must predict the behavioral patterns we have found. In particular, such a model must predict bilateral reciprocity between the three countries, mixed with routine behavior in each country and triangular asymmetry with respect to Sino–Soviet relations. In general, our results suggest we should be studying three-person games with stylized asymmetries in payoffs along with elements of prisoner's dilemma–like incentives conducive to strategies of reciprocity (see Goldstein and Freeman 1990, 137–41).

For psychological theorists of international cooperation (e.g., Jervis 1976), our research validates the "spiral model" of reciprocal response rather than the "deterrence model" of inverse response for the Cold War era. Our finding of strong bureaucratic routine in all three countries supports psychological theorists' claims about needs for sustained series of cooperative initiatives to overcome inertia (Osgood's [1962] "GRIT" proposal) and effective communication of one's willingness to cooperate (Larson 1988). Also, our result about the consistency of reciprocity and triangularity over four decades implies that longstanding norms of reciprocity can lead to a great power security regime (Jervis 1981). At the same time, our results call for the incorporation of new research on the effects of triangular asymmetry—more specifically, on the conditions under which subjects will modify behavior toward a second subject based on the latter's relations with a third subject. Our results also call for an account of the behavioral changes that occurred at the historical "break points" we have identified.

In these ways, then, our investigation provides a solid empirical foundation for the study of great power politics. It contributes to the development of more realistic and practical theories of international cooperation, and delineates the conditions under which such cooperation must be sought. While great power behavior is a complex and difficult subject, we have moved a step closer to understanding that phenomenon and thus strengthening both theory and policy.

## Notes

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1. Under Williams and McGinnis' (1988) simple linear additive form, $FP_t = C_t + T_t$, from which it follows that $FP_{t-1} = C_{t-1} + T_{t-1}$. Substituting the identities for cost and threat into the first of these equations, we have $FP_t = C_{t-1} + u_t + T_{t-1} + v_t = (C_{t-1} + T_{t-1}) + (u_t + v_t) = FP_{t-1} + e_t$, where $e_t = (u_t + v_t)$. The rational expectations hypothesis is embodied in the idea that were it not for the *shocks* (surprises) in cost and threat, $u_t$ and $v_t$, each superpower would be able (perfectly) to anticipate the other's behavior, so that when that behavior actually occurred, it would have no impact on the first superpower's behavior. In other words, if $u_t$

and $v_t$ were both zero, the expected cost and threat estimates would remain the same ($C_t = C_{t-1}$ and $T_t = T_{t-1}$), so that current behavior would be the same as past behavior ($FP_t = FP_{t-1}$). See also McGinnis and Williams (1989a, esp. 1105–6). This approach builds on economic theories of rational expectations. See Sargent 1984, Hansen and Sargent 1980, and Jordan and Radner 1982.

2. Ward does not study the effects of a cooperative initiative per se. Presumably, he would interpret this as a unit change in the corresponding right-hand-side variable in his equations. Under this interpretation Ward's results would predict that a cooperative initiative by either superpower would elicit some cooperation, at least over the short term. In view of Ward's conclusions about the inherent instability of his models (1982, 122–23), such an effect would presumably be purely short-term.

3. McGinnis and Williams's (1986) results are similar to Ward's in terms of the effects of cooperative initiatives. McGinnis and Williams find that an unexpected surge of hostility by the United States toward the Soviets produces decreases in both U.S. and Soviet defense spending, while an unexpected act of hostility by the Soviets toward the United States again elicits an increase in U.S. spending. In their follow-up study (McGinnis and Williams 1989b), which employs Bayesian quasi-structural models rather than unrestricted VAR models, these authors do find mutually reciprocal responses to hostile initiatives. Note that a random walk prior is used in the Bayesian part of this analysis.

4. In addition to the criticisms given, familiar problems include failure to adjust for autocorrelation and idiosyncratic design decisions regarding measures and statistical models (see King 1989; Rajmaira and Ward 1988; Zinnes 1980).

5. Freeman (1990) and Rajmaira and Ward (1988) both show that the original Ward (1982) model in all likelihood omits relevant lags of right-hand-side variables. Below we show that Starr's (1982) models of the strategic triangle also omit relevant lags of the three countries' behaviors. King's (1989) Poisson regression models may be plagued by this problem as well. King's $\lambda_3$ parameter also may represent some of the effects of Chinese foreign policy.

6. Freeman (1990) discusses problems associated with systematic sampling and temporal aggregation in international relations research. He shows that the use of annual data led Ward (1982) to derive biased and inconsistent estimates of superpower reciprocity and Williams and McGinnis (1988) to draw inaccurate inferences about the adequacy of their random walk model of U.S. and Soviet behaviors. Goldstein (n.d.) discusses the effects of time aggregation in events data analyses of U.S.–Soviet relations.

7. From a conceptual standpoint, the move to events data is less problematic than one might assume, since researchers like Williams and McGinnis (1988, n. 12) use military expenditures only as an indicator of "superpower actions."

8. Computations used the Regression Analysis of Time Series (RATS 2.01 and 2.11) software package, on IBM or compatible micro- and mainframe computers, at the University of Southern California and the University of Minnesota.

9. In this way our analysis answers George, Farley, and Dallin's charge that to date, most experimental studies of great power cooperation lack external validity (1988, chap. 1). This part of the analysis is a simulation exercise. The VAR model is first transformed into its (recursive) moving average form, which expresses each left-hand-side variable as a sum of orthogonalized shocks in the variables in the system. With this new version of the model we can trace out the effect of a shock or surprise change in the level of any variable. As noted in the text, these shocks are operationalized with magnitudes of one standard deviation of the residual in the respective equation. The recursive moving average model is used to circumvent the fact that the residuals in the original VAR model are usually contemporaneously correlated. For more details of this aspect of the analysis, see Freeman, Williams, and Lin 1989.

10. This one-dimensional approach to measuring national behavior traces back to Richardson (1960, 13, 61). Thompson and Rapkin similarly study "net behavior (cooperation minus conflict)" (1982, 251). COPDAB events were weighted according to Azar's (1980) scale. Ashley's 30-point scale was assigned weights making it roughly comparable with the COPDAB categories while preserving the rank order of the Ashley scale. WEIS events were weighted using Vincent's (1979, 29, I3) scale, which differs little from a simple count of hostile and cooperative events. Our scaling and aggregation procedures are described more fully in Goldstein and Freeman 1990, chap. 2.

11. For example, a leadership transition might result in a change in the way that foreign policy makers form (adaptive) rational expectations. See McGinnis and Williams 1989b.

12. Since all six of our equations have identical lagged right-hand-side terms, ordinary least squares yields consistent, asymptotically efficient estimates of the coefficients in the VAR model. Extra lags of the variables or separate dummies for each time point in the presumed period of instability are placed in each equation. A modified likelihood ratio test is then used to determine if these extra lags or dummies significantly enhance the accuracy of the model. The modified likelihood ratio statistic takes into account the fact that the degrees of freedom in the asymptotic chi-squared distribution for the likelihood ratio statistic is often of roughly the same magnitude as the degrees of freedom left in the data after the vector autoregressive model is estimated. The usual test statistic is $T(\log|D_R| - \log|D_u|)$, where $D_R$ and $D_u$ are the matrices of the cross-products of residuals for

the restricted and unrestricted models, respectively. This is modified to be $(T - k)(\log|D_R| - \log|D_u|)$, where $k$ is the total number of regression coefficients minus the number of equations in the model. See Sims 1980, 17–18.

13. The results for the COPDAB data suggest a temporary period around 1965–70, in which the patterns of response differed from the rest of the 1953–78 period but which led to no permanent change in the following years. (Note, however, that the "noisy" nature of events data may mean that our statistical tests are unable to detect this structural change in the system.) Unfortunately the time ranges covered by our other data sets prevent us from determining whether the other two break points (the early 1950s and the early 1980s) also would appear "temporary" in a longer time frame. The full results for the stability checks and lag length tests are available from us.

14. Note that by not imposing the same lag length and not focusing on the identical time period for all three models, we create an even more stringent test for the propositions. If one of the propositions holds up across all of these models, we can be more confident of its validity than if we had imposed the same lag length and studied the identical subperiod for all three models. Note that the analysis periods of the WEIS and ASHLEY data sets do not even overlap, so that not only the measurement procedures but the actual historical events were different for these two analyses.

15. The results of the simulations with fitted VAR models have been known to change when the order of the variables is changed (see Freeman, Williams, and Lin 1989). However, our results are robust against alternative orderings of the variables. These ancillary results are available from us.

16. Rational expectations theory might be revised to account for our results, for instance, by assuming that great powers process information inefficiently. For example, the direct causal connections between countries' behaviors could be explained in terms of delays in their bureaucracies' processing observations of other countries' behaviors. Such an argument would require more systematic study and modeling of bureaucratic decisionmaking in the United States, the Soviet Union, and China (Majeski 1985, 237–39; Achen 1988). The analytical challenge here is to build a rational expectations model for great power politics that predicts the pattern of bilateral and triangular relationships we have found. Making these improvements in rational expectations theory is no easy task. Note that Williams and McGinnis' model (1988) has difficulty predicting any causal links between countries' foreign policy behaviors because, *if only one or neither country reacts to expected threats, their theory still predicts that both countries behave like a random walk.* Technically minded readers can verify this by replacing the assumption that $FP_t = C_t + T_t$ with the alternative $FP_t = C_t$. Then, with costs defined as before, $C_t = C_{t-1} + v_t$. But now $FP_t = C_t$. So $FP_{t-1} = C_{t-1}$, and the behavioral equation is $FP_t = FP_{t-1} + v_t$; the superpowers still behave according to random walks, and any correlation of respective residuals represents common variation in shocks to cost variables alone.

17. Again, the second of these did not create sufficient instability in COPDAB coefficients to warrant breaking the 1953–78 period into two subperiods for analysis.

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