Critical Analysis of Two System Level Approaches to the Study of War

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APPROACHES TO THE STUDY OF WAR

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Introduction

Both the traditional philosophical and theoretical, as well as the more recent empirical literature on the causes of war have highlighted the importance of countries' power and interests. It has been argued and shown that patterns of industrial and military growth inside countries correlate with initiation of war, that strong countries can fight far from home, and that the accumulation of economic and military power raises a government's interests in, access to and control over events in distant regions. (See Organski, 1968, Ch. 14; and Pearson, 1974.) Until recently, however, there were few systematic attempts to account for these correlations theoretically.

Two recent books contain such theoretical efforts, and the reasoning presented in them will be examined in this study. Both Midlarsky's, On War, and Choucri and North's Nations in Conflict are premised on the systems approach to "explaining" war, although both also reflect facets of the "national characteristic" level of analysis. (See Waltz, 1967) From these perspectives conflicts and/or wars occur at the intersection of states' interests, with the interests being strongly conditioned by national economic and military (i.e., power) growth. In addition, Midlarsky's work was influenced by psychological findings from frustration-aggression research, and thus has elements of Waltz's "individual level" of analysis. The Midlarsky and Choucri-North approaches will be described below in greater detail.

One of the first analyses to develop and "test" the systems approach appeared in Quincy Wright's, A Study of War. Various types of distances between countries were related to the probability of war between them. Wright attempted to explain the behavior of states already involved in disputes--i.e., whether and under what circumstances they will resort to violence, as opposed to juridical or other means, to settle disputes. Wright's work fits in with

Midlarsky's and Choucri and North's, since the latter attempt to account for the development of disputes as well as wars, while Midlarsky delineates probabilities of war for states which have already expanded their interests in the world through accumulation of wealth and other capabilities.

Wright predicts that a state will deem a certain policy appropriate to resolving a dispute with another state or states depending on its distance from other actor(s). According to Wright, distances can be "technological" (the ease or difficulty of communications and peaceful exchanges between states), "strategic" (ease or difficulty of military attack), "intellectual" (similar or different logical and terminological perspectives), "legal" (mutual recognition of or failure to recognize equal legal standing), "social" (similarity or difference of public opinion about important societal institutions--such as the Church), "political" (similarity or difference of public opinion about political issues or institutions; also, degree of inter-governmental integration), and "psychic" (attitudes of friendliness or hostility; expectation of war or peace, i.e., "expectancy distance"). (Wright, 1965, pp. 1240-55) Wright goes on to predict (p. 1257) that "dictation" (force) will be used to settle disputes more often if technological distances are decreasing more rapidly than psychic distance. "Dictation is also likely, even if states are technologically distant . . . if their strategic distance is not reciprocal." Expectancy of war also tends to be greater when psychic distance is greater than technological distance or when social distance is greater than intellectual distance (p. 1277).

Wright's assertions make some intuitive sense in that violence is predicted if states are technologically able to reach each other easily but do not share common values. Wright does not claim that this constitutes a theory of war, and indeed it does not since none of the premises or propositions that

would logically lead us to these conclusions are spelled out. Intuitively
there are also good reasons to doubt whether societal values have much to do
with war's outbreak, especially when translated into such vague concepts as
"political" or "social" distance. Were France and Germany really more socially
distant than France and Turkey prior to World War II? How would we begin to
measure these notions, especially in light of French public sentiment on
Jewish and other questions during Vichy (see the movie, The Sorrow and The
Pity)? States may fight because of the political benefit or necessity per-
ceived by leaders. (For a pessimistic view of the prospects for a theory of
war see Reynolds, 1973, pp. 213-14.) Yet those of us pursuing a "scientific"
approach to war-peace analysis have often developed rather impersonal concepts
about the "physics of nations"--e.g., their distances.

Most tests of such concepts have been intuitive because of difficulties
in measuring the concepts.[1] In turn, measurement difficulties relate to the
sparcity of theoretical justification for and the imprecision of the concepts.
To speak of the friendliness or hostility of one population for another is to
personify a group; alternately, to argue that a single leader declares war on
another state because he or she is unfriendly toward the enemy is theoretically
and empirically unjustified. Such logical errors could be forgiven in the
pioneering work of Wright. Unfortunately, they are also present in more re-
cent efforts to build on the systems perspective.

As Wright believed that advancements in technology increase ease of com-
munication, and hence countries' interest in and ability to reach each other
with force if necessary, Choucri and North assert that countries' rates of
internal growth increase their foreign disputes. States are conceived of as
vessels, within which pressure ("lateral pressure") builds, resulting in out-
ward expansion (not necessarily territorial, but expansion of overseas contacts).

As several states' interests expand, the states' spheres of influence or concern intersect, and points of conflict are established. Conflict can concern various issues, but probability of conflict increases with governments' overseas interests, interests which are generated by demands of the home population or elites. Demands are directly proportional to the country's population and level of technology (resources are used up faster and people seem to expect more goods and services in technologically advanced states), and are mitigated by (inversely related to) environmental and ecological resources. The search for such resources leads to overseas involvements, and results from the build-up of lateral pressure. Such pressure will be greatest for states with many internal demands and the kind of capabilities to seek resources abroad (armies, navies, shipping and airlines, commercial enterprises, etc.). The model may be expressed by two simultaneous equations:

$$\text{Demands} = \frac{\Delta \text{ Population } \times \Delta \text{ Level of Technology}}{\Delta \text{ Resources}}$$

$$\text{Lateral Pressure} = \Delta \text{ Demands } \times \Delta \text{ Specialized Capabilities}$$

where "Δ" indicates that the process of expansion depends on the change in the value of these variables.

The form of overseas involvement which results depends on the amount of resistance to resource acquisition and control encountered; if foreign regions and states are easily penetrated, the involvements will probably be harmonious. But if the interstate system is full of "laterally pressured" states, or if states erect nationalistic barriers to penetration, conflict will result. These conflicts will turn violent if states have many conflictual intersections of interest and if arms races and hostility have been increasing in intensity.

(Choucri and North, 1972, and 1975, pp. 80-87 and 109)

There are many difficulties in operationalizing these concepts and conceptualizing the mathematics involved. For instance, when population totals are divided by measures of resources such as land area, the meaning is fairly clear--i.e., population per acre. But the additional step of multiplying population times technological level, as measured by steel production per capita for example, before dividing by resources obfuscates the results. What is the meaning of the resulting total, expressed in tons of steel per acre? Does it really indicate the level of demands on the government?

Furthermore, while specialized capabilities, such as a large merchant fleet, may enable states or leaders to assert themselves abroad, they also afford the kind of increased influence which might make war unnecessary. The demands on the Japanese government to secure needed resources were great in 1941, and the history of U.S. and Japanese expansion after 1900 may have put the U.S. and Japan on a collision course which, with the provocations of 1937 to 1941, produced World War II in the Pacific. However, if President Roosevelt had dropped his objections to Japanese policy in China, and had thought more about the importance of U.S.-Japanese trade for both societies, or if the Japanese had opted to establish their "Co-Prosperity Sphere" through economic rather than military penetration, perhaps differences would have been settled peacefully. This raises the philosophical question of "diplomatic free will" in a situation of lateral pressure--what are the variables that allow a leader to perceive and utilize alternate means of satisfying demands or to choose between competing demands? This is left unspecified in the Choucri-North model and analysis.

Choucri and North also have tested and applied their model mainly in situations of major power competition, for major powers are the states with

the most technology and specialized capabilities. It remains to be seen
whether disputes and wars among smaller powers also relate to "lateral
pressure." Choucri and North seem to predict low lateral pressure, and hence
few warlike involvements for smaller poorer states--or even for highly pop-
ulated but poor states. Such states would not have the specialized cap-
abilities and technology to meet the demands generated by growth in their
population or technology. Such societies might be penetrated by societies
with greater capabilities. (Choucri and North, 1972, pp. 91-92) However,
perhaps lateral pressure is a relative phenomenon, with leaders comparing
their states' capabilities to other states in the same region. Hence,
ambitious regional powers may engage in expansive activities to increase
access to needed resources. Also, perhaps states with low lateral pressure
still engage in assertive and warlike behavior, because of greed, internal
politics, imitative behavior, traditional feuds, or other reasons. Obviously,
pressure for expansion may result from technological growth in Western cul-
tures which value technology, but may stem from other factors in other cul-
tures.

Choucri and North examine the implications of governments' attempts to
exercise international influence in order to obtain needed resources.
Midlarsky also develops a "theoretical framework" about war emphasizing the
exercise of power to control environments. Indeed, for Midlarsky, a state's
power is defined as its ability to reduce uncertainty in its international
environment, i.e., to make certain outcomes more probable than others.
Translating frustration-aggression theory to the international system,
Midlarsky predicts that national leaders will resort to international violence,
whether or not a dispute already exists, if they have the capability of re-
ducing uncertainty but are somehow prevented or "constrained" from doing so

and the uncertainty persists or increases. (Midlarsky, 1975, pp. 37-38)
Thus, Midlarsky speculates that a state which enters alliances or has many
bordering states will be constrained from the free exercise of international
influence, and will resort to violence more frequently than less constrained
states. He concludes that his initial empirical tests of these predictions
bear them out. (Midlarsky, 1975, Ch. 3)

While the conception of power as uncertainty reduction makes sense in-
tuitively, Midlarsky's analysis, like Wright's and Choucri-North's, suffers
from a certain political naiveté, as well as difficulties in operationalization.
Thus, further testing is in order before we accept Midlarsky's findings as
definitive. In particular the concepts of uncertainty and constraint are very
fuzzy. People are always uncertain about outcomes; how uncertain must one be
to resort to violence? The Japanese knew with great certainty that they would
soon run out of oil in the last weeks of 1941; here certainty may have led to
violence despite uncertainty about the ultimate success of the violent actions
in securing resources. People and governments are also always constrained in
some ways from achieving some goals--how much constraint is necessary before
resorting to violence? If the answer is "great constraint," then is it not
logically untenable to describe the same state as very powerful and greatly
constrained regarding a particular issue or need? Is Midlarsky saying that
power is the ability to use all means to reduce uncertainty, and that states
forced to resort to military tactics are not very powerful? Or is he saying
that a state can be powerful and yet forced to resort to violence? Why would
a state, by definition able to reduce uncertainty in the environment by non-
violent means, be constrained from doing so?

The types of constraints Midlarsky posits do not seem likely to limit a
powerful state. For instance, the assumption that alliances restrict states,

and that borders increase uncertainty are doubtful. States, and especially powerful states, have abandoned, double-crossed, and failed to consult allies throughout history, and borders can be penetrated in a variety of ways. States with many neighbors may have more potential conflicts, but previous empirical studies have not clearly shown a tendency for such states to engage in more warfare. (See Pearson, 1974, p. 454.) Thus, Midlarsky does not provide clear conceptualization and valid measures of uncertainty, constraint, or power.

Furthermore, it is not clear that Midlarsky is saying much more in his "theoretical framework" than: "if leaders or groups with power do not get what they want by other means (whether because of constraints imposed from outside or from voluntary restraints) they will use force to get it." In this sense, the analysis entails cost-benefit calculation rather than psychological reactions to frustration or constraint or powerlessness. Implicit in Midlarsky's work is the notion that leaders will resort to war mainly after realizing that other options are precluded; but what of the leader who uses war as a first resort for political benefits either at home or abroad?

Thus, the two recent systems approaches to war, as well as their ante-cedent, do not qualify as theories and suffer from logical and empirical flaws. This is especially true when they are compared to the criteria for adequate theory specified by Reynolds (1973, p. 51): "(1) a set of explanations asserting the occurrence and time of the phenomenon which is the subject of explanation; (2) a set of universal hypotheses or laws which is related empirically to the phenomenon; and (3) the logical deduction of the phenomenon from these two sets." Nevertheless, to determine whether it is fruitful to pursue the systems approach in general, we must try to determine how much variation in the occurrence of international disputes or violence is associated with the types of variables which Wright, Choucri and North, and Midlarsky speculate may be important and/or

manipulable. This requires a focused research design that encompasses both occurrence and non-occurrence of wars or disputes year by year--in the context of a particular period in the history of large and small powers. Researchers studying the warlike involvements of particular states or groups of states over wide sweeps of one or two centuries may miss the context of tensions and political concerns that vary from year to year and regime to regime. If it can be shown that changing distances, lateral pressure, or uncertainty are associated with war in a geographical subsystem during a generation, or from year to year, we will have indications that the structure of the system strongly impinges on fast breaking decisions. If not, perhaps the system provides the outer limits of leaders' options, but more specific knowledge of political contexts may be necessary to forecast, prevent, or end wars.

Data and Methodology

In order to test the predictions involved in the two recent systems approaches, a subsystem of ten central Asian states has been chosen. These are states which are close enough geographically to be within reach of each others' armed forces, and to be of political concern to each other. Segments of Asia, such as Indo-China, which underwent nearly continuous warfare during the period under study were excluded. The ten include an emerging superpower (USSR), two large regional powers (China and India), three well armed regional powers (Turkey, Iran, and Pakistan), and four rather weak states (Afghanistan, Burma, Thailand, and Nepal). We will determine whether the political disputes and shooting wars among these states from 1950-70 occurred when the participants ranked high or low, or were increasing or decreasing on the variables identified by Choucri-North, and Midlarsky.

Political disputes are defined as clearly hostile hostile public conflicts between governments over specific issues. Hence, vague and general conflicts,

such as "cold wars," would be broken down into specific controversies over certain issues. Wars are defined as hostile military clashes involving use of the armed forces of at least one participant. Incidents beginning in each year are recorded both among the ten states and, as an aggregate, for each of the ten and other states in the world. Conflicts with states outside the subsystem could either increase or lessen the probability of intrasystem conflict, so it is important to determine all the hostile relations of each state. Dependent variables will be wars, in analysis of Midlarsky's predictions, and both disputes and wars for the Choucri-North predictions.

The basic formulas in the Choucri and North framework have been simplified and operationalized as follows based upon a reading of both their early and later work:

$$Demands = \frac{Population \times Energy\ Consumption}{Land\ Area}$$

$$Lateral\ Pressure = Military\ Personnel \times Demands$$

where Energy Consumption (in metric tons of coal equivalent) represents technology; Land Area represents environmental and ecological resources; and Military Personnel represents the type of specialized capability most suited to military action. These formulas will be tested using both the actual yearly figures and using data on the change in the values of the variables from one year to the next.

Since number of alliances and number of borders for each country may not adequately measure Midlarsky's uncertainty or constraint variables, we have substituted number of irregular executive transfers in other states in the system. Each country among the ten will be assigned an "uncertainty score" for each year based on the total of irregular executive transfers among the other nine states in the system. Midlarsky's capability variable will be measured by both energy consumption and number of military personnel.

Obviously, although irregular executive transfers in other countries do not directly indicate a leader's uncertainty about possible foreign policy outcomes, we presume that in most cases an unexpected coup d' etat in a nearby state will raise the interest and worries of a political leader. Of course, irregular executive transfers may not be unexpected or unwelcome events, but they almost certainly introduce an element of uncertainty for neighboring governments since new leaders are taking power. These leaders may have ruled before, but there is still uncertainty as to the probability of popular acceptance of the coup. Thus, there is both uncertainty as to which elite can govern, and as to which policies the elite will enact. Such uncertainty, generated by the 1958 coup in Iraq, probably led to U.S. military intervention in Lebanon and Jordan in that year.

Analyses will be run to test each theoretical framework, with country-year as the unit of analysis. In other words, each pair of Asian states will be rated on each variable (or change in each variable) for each year, with the prediction that the years with the most wars or disputes will be those in which disputing or warring states had the highest lateral pressure in the system that year (Choucri-North), or in which warring states had high power, (actual or rate of change) and uncertainty scores compared to other states in the system (Midlarsky).

Findings

In general, the variables proposed by Choucri and North, and Midlarsky do not strongly relate to central Asian disputes or wars. However, there is at least some support for both theories, with Asian states' disputes and violence somewhat more likely to stem from their lateral pressure than from uncertainty in the environment.

Violent states had much higher lateral pressure scores across the twenty

year period under study (Table 1) than disputing states,[2] which in turn had higher scores than peaceful states. This is true whether specialized capability is measured by military expenditures, military manpower, or trade per capita, and is statistically significant.[3] However, in a stepwise multiple regression analysis (Table 2) using the variables which measure change from one year to the next, the most powerful explanatory variable in predicting the change in the total number of disputes is "change in the number of military personnel", which accounts for about six percent of the variation, while "change in demands" (as measured by the simplified version of the Choucri and North formula) accounts for less than one percent of the variation. This pattern is generally true whether disputes inside and outside the region are analyzed separately or aggregated, although the strongest predictor variable for regional disputes was trade per capita. Hence, while lateral pressure (as aggregated in Table 1) seems to relate to disputes, changes in lateral pressure (measured across one year intervals) appear to have little effect and furthermore, it seems that level of power, rather than lateral pressure or demands is the more important variable in predicting the occurrence of conflicts and military clashes among the small and large states of Central Asia.

Turning to Midlarsky's predictions, there is some relation between both power and uncertainty, on the one hand, and initiation of violence (Table 3). While there was little or no correlation between power and uncertainty for attacking Asian states (or for peaceful states), a generally higher percentage of attackers had "high" scores on both power and uncertainty, when compared to peaceful states, and a higher percentage of peaceful states had "low" scores on both variables. These differences were statistically significant whether energy consumption or military manpower were used as power measures. However,

Table 1

Analysis of Choucri and North Approach

1950-70

	Average Lateral Pressure (Military Expenditures as % of GNP)	Average Lateral Pressure (Military Manpower)	Average Lateral Pressure (Trade Per Capita)
Regional Clashes	165,294 (N=5)	64,797 (N=10)	369,483 (N=11)
Attacks	110,159 (N=4)	53,952 (N=9)	210,128 (N=10)
Regional Disputes	69,332 (N=6)	37,357 (N=13)	177,096 (N=9)
Both Regional and Outside Clashes in the Same Year	----	111,547 (N=1)	216,774 (N=1)
Both Regional Clashes and Outside Disputes in the Same Year	----	147,806 (N=1)	304,973 (N=1)
Both Regional Disputes and Outside Clashes in the Same Year	----	38,797 (N=1)	----
"Peaceful"	55,734 (N=61)	16,161 (N=98)	98,561 (N=88)

Table 2

Step-Wise Multiple Regression Analysis of Choucri-North Model

Rate of Change

Δ Total Disputes = .001 (Δ Military Personnel) - .009 ($\Delta \frac{Population}{Area}$) - .000 ($\Delta \frac{Trade}{Population}$) - .000 ($\Delta \frac{Population}{Area}$ x Δ Energy Consumption) + .04

R^2 = .08 (N=107). F significant only for (Δ Military Personnel) at better than .01 level.

R^2 for each independent variable: .063, .007, .004, .004

R^2 for Δ Disputes <u>outside</u> region = .10 (with Δ Military Personnel accounting for .09).

R^2 for Δ Disputes <u>inside</u> region = .05 (with $\Delta \frac{Trade}{Population}$ accounting for .02).

Actual Yearly Figures

Total Disputes = .315 (Military Personnel) - .000 ($\frac{Population}{Area}$ x Energy Consumption) + .003 ($\frac{Trade}{Population}$) - .000 (Energy Consumption) - .003 ($\frac{Population}{Area}$) - .03

R^2 = .26 (N=112). F significant for (Military Personnel), ($\frac{Population}{Area}$ x Energy Consumption), and ($\frac{Trade}{Population}$) at better than .01 level.

R^2 for each independent variable: .187, .043, .015, .013, .001

R^2 for Disputes <u>outside</u> region = .25 (with (Military Personnel) accounting for .16).

R^2 for Disputes <u>inside</u> region = .06 (with $\frac{Trade}{Population}$ accounting for .04)

TABLE 3

Analysis of Midlarsky Approach

1950-1970

ATTACKS IN REGION

Uncertainty	Energy Consumption			Military Manpower			Δ Energy Consumption				Δ Military Manpower		
	L	H		L	H		0 or NEG	M	H		0 or NEG	POS	
Zero=L	5	4	9(53%)	1	3	4(44%)	0	7	1	8(50%)	3	1	4(50%)
Above zero=H	3	5	8(47%)	1	4	5(56%)	1	6	1	8(50%)	3	1	4(50%)
Uncertainty	8 (47%)	9 (53%)	17	2 (22%)	7 (78%)	9	1 (6%)	13 (81%)	2 (13%)	16	6 (75%)	2 (25%)	8

"PEACEFUL"

Uncertainty	Energy Consumption			Military Manpower			Δ Energy Consumption				Δ Military Manpower		
	L	H		L	H		0 or NEG	M	H		0 or NEG	POS	
Zero=L	55	24	79(61%)	48	20	68(66%)	7	58	7	72(65%)	34	28	62(71%)
Above zero=H	36	14	50(40%)	25	10	35(34%)	3	30	6	39(35%)	17	9	26(29%)
Uncertainty	91 (71%)	38 (29%)	129	73 (71%)	30 (29%)	103	10 (9%)	88 (80%)	13 (11%)	111	51 (58%)	37 (42%)	88

power seems to be a more important (and statistically significant, albeit for relatively few cases of attacks) factor in these relationships than uncertainty, since attackers were much more frequently high in power than were peaceful states. There was no statistically significant evidence that attacking states were growing more rapidly in power than were peaceful states, and although peaceful states tended to have fewer high uncertainty scores than attacking states, the differences were not statistically significant at the .05 level.

Thus, level of power, rather than rate of power increase, helps somewhat in predicting use of force in Asia, while absence of uncertainty may be conducive to maintenance of peace. This accords with the previous finding that level of power rather than changing levels of power and lateral pressure related to Asian disputes; in neither analysis was the impact of power on disputes or clashes very strong.

There are problems in measuring uncertainty through irregular executive transfers, as we see in the yearly data (Table 4).[4] There is never much difference in uncertainty scores between the Asian countries because many countries were assigned the same uncertainty score (total of irregular executive transfers in the region, not including irregular executive transfers inside the country being scored). Therefore, there is never enough variation between countries to assess the impact of uncertainty year by year.

Thus, energy consumption and military power indicators are more instructive than our measure of uncertainty, and it appears that rate of increased energy consumption, especially in the 1950's and especially for China, related to violent clashes. China was the only country involved in simultaneous clashes inside and outside the region. Evidently, it took a hefty technological growth rate to sustain or result in such two-front skirmishing. There was generally little or no greater growth in military manpower for such warring states when

Table 4

Analysis of MIDLARSKY Approach

YEARLY, 1950-1970

YEAR	CLASHES IN REGION	N	AVERAGE UNCERTAINTY	N	AVERAGE ENERGY CONSUMPTION (000 METRIC TONS)	N	AVERAGE MILITARY MANPOWER (MILLIONS)	N	AVERAGE Δ ENERGY CONSUMPTION	N	AVERAGE Δ MILITARY MANPOWER	N	OUTSIDE CLASHES	N
1953	CLASH	2	1.0	2	637	2	N.A.	-	+50%	2	N.A.	-	0	2
	NO CLASH	8	0.9	8	94970	5	N.A.	-	+ 9%	4	N.A.	-	1	8
1955	CLASH	2	-0-	2	845	2	N.A.	-	+31%	2	N.A.	-	0	2
	NO CLASH	8	-0-	8	84697	7	N.A.	-	+14%	5	N.A.	-	0	8
1956	CLASH	4	-0-	4	40548	4	3.0	1	+25%	4	0%	1	0	4
	NO CLASH	6	-0-	6	100656	5	1.2	4	+17%	2	-7%	4	2	6
1958	CLASH	2	3.0	2	141620	2	3.0	1	+61%	2	0%	1	1	2
	NO CLASH	8	2.6	8	82069	7	1.2	4	+36%	7	+½%	4	0	8
1959	CLASH	2	-0-	2	150015	2	3.0	1	+164%	1	0%	1	0	2
	NO CLASH	8	-0-	8	82970	8	1.2	4	+17%	8	+13%	4	0	8
1960	CLASH	2	2.0	2	3265	2	0.1	1	+19%	2	+40%	1	0	2
	NO CLASH	8	1.8	8	120535	8	1.6	4	+17%	7	+ 5%	4	1	8
1962	CLASH	2	1.0	2	126560	2	1.4	2	- 8%	2	0%	1	0	2
	NO CLASH	8	0.9	8	87170	8	0.6	8	+15%	8	+16%	4	2	8
1965	CLASH	2	-0-	2	46330	2	0.6	2	+12%	2	+ 6%	2	0	2
	NO CLASH	8	-0-	8	134415	8	0.8	8	+29%	8	+ 7%	8	0	8
1969	CLASH	2	N.A.	-	630300	2	2.9	2	+20%	2	0%	2	0	2
	NO CLASH	8	N.A.	-	19038	8	0.3	8	+23%	8	+ 3%	8	0	8

YEARS IN WHICH ONLY OUTSIDE CLASHES TOOK PLACE:

1950 – Participants ranked first and second in regional military manpower. Uncertainty in region = 1.0

1954 – Participants ranked first and second in energy consumption and military manpower, and ranked second and third in growth of energy consumption. Uncertainty in region = 0.

1957 – Participant ranked fourth in energy consumption and third in military manpower, sixth in growth of energy consumption. Growth of military manpower = 0. Uncertainty in region = 1.0.

1961 – Participant ranked third in energy consumption and military manpower and ranked fourth in growth of energy consumption. Uncertainty in region = 0.

1963 – Participant ranked fourth in energy consumption and military manpower and ranked second in growth of energy consumption. Uncertainty in region = 0.

1964 – Participant ranked fourth in energy consumption and military manpower, third in growth of energy consumption and second in growth of military manpower. Uncertainty in region = 0.

1966 – Participant ranked seventh in energy consumption and military manpower and first in growth of energy consumption and growth of military manpower. Uncertainty in region = 0.

1968 – Participants ranked first and seventh in energy consumption, and military manpower, fourth and seventh in growth of energy consumption, and fifth and seventh in growth of military manpower. Uncertainty in region = N.A.

compared to those at peace, and peaceful states generally used more energy than those beginning wars. Nevertheless we have the first evidence that, as Choucri and North predict, growth in technology can lead to violent encounters.

However, yearly analysis of lateral pressure scores (Table 5) based on our simplified formula, rather than Choucri-North's rate of change regression formula) does not disclose relations between average increases or decreases in lateral pressure and the evolution of disputes. Measuring rate of pressure change over two years (instead of one year as in the regression results reported above), the lateral pressure of disputants grew faster than that of non-disputants in four of eight years with available data. Two of these four were 1958 and 59, in which the People's Republic of China dominated the scores. By comparison, absolute lateral pressure was greater for disputants in eight of twelve years with available data, with an especially consistent pattern for the 1950's. Note, though, that there are too few cases in any given year for statistical reliability.

Conclusion

While knowledge of the military strength and technological level of Central Asian states sometimes helps us predict their foreign disputes and military clashes, there is surprisingly little evidence of systemic factors, at least as measured here, conditioning war-peace decisions. At most, military manpower accounted for less than 20% in the variance of disputes; uncertainty had relatively little impact on clashes, (although measurement problems limit our conclusions here); the effect of power on clashes and disputes seemed to vary across the years and between the 1950's and 60's; and rates of increase in power, technology, and uncertainty seemed not to influence foreign disputes or clashes very much, with the possible exception of China. These results are surprising because it makes intuitive sense that growth rates and power lead states to

Table 5

Analysis of Choucri and North Approach

YEARLY 1950-70

YEAR	HOSTILITY	AVERAGE LATERAL PRESSURE (MILITARY MANPOWER)	N	AVERAGE Δ LATERAL PRESSURE (MILITARY MANPOWER)	N
1954	Regional Disputes	38797	1	-21%	2
	No Regional Disputes	19164	2	+16%	8
	All Disputes and Clashes	38483	2	- 6%	3
	"Peaceful"	159	1	-10%	7
1955	Regional Disputes	22136	2	+19%	3
	No Regional Disputes	15551	3	--	7
	All Disputes and Clashes	22136	2	+19%	5
	"Peaceful"	15551	3	--	5
1956	Regional Disputes	52496	1	+36%	1
	No Regional Disputes	12678	4	--	9
	Regional Clash	52496	1	+36%	4
	No Regional Clash	12678	4	--	6
	All Disputes and Clashes	51503	2	+34%	5
	"Peaceful"	68	3	--	5
1958	Regional Clash	111547	1	+113%	2
	No Regional Clash	14546	4	+15%	8
	All Disputes and Clashes	84730	2	+65%	3
	"Peaceful"	91	3	+35%	7
1959	Regional Disputes	147806	1	+173%	2
	No Regional Disputes	14242	4	+ 6%	8
	Regional Clash	147806	1	+173%	2
	No Regional Clash	14242	4	+ 6%	8
1960	Regional Disputes	93405	1	-17%	2
	No Regional Disputes	14704	4	+ 1%	8
	Regional Clash	1	1	--	2
	No Regional Clash	38056	4	-11%	8
	All Disputes and Clashes	50635	3	-11%	5
	"Peaceful"	160	2	+18%	5
1961	Regional Disputes	0	1	--	1
	No Regional Disputes	15110	9	--	9
1962	Regional Clash	42551	2	--	2
	No Regional Clashes	8207	8	--	8
	All Disputes and Clashes	37476	4	--	4
	"Peaceful"	142	6	--	6
1964	Regional Disputes	13403	2	+26%	2
	No Regional Disputes	20074	8	+24%	8
	All Disputes and Clashes	22391	4	+ 4%	4
	"Peaceful"	16305	6	+52%	6
1965	Regional Disputes	15061	2	+25%	2
	No Regional Disputes	22138	8	+21%	8
	Regional Clash	15061	2	+25%	2
	No Regional Clashes	22138	8	+21%	8
1969	Regional Clash	110450	2	+25%	2
	No Regional Clash	6813	8	+33%	8
	All Disputes and Clashes	73686	3	+25%	3
	"Peaceful"	7764	7	+33%	7
1970	Regional Disputes	25968	2	+ 7%	2
	No Regional Disputes	32429	8	+37%	8
	All Disputes and Clashes	35251	4	+10%	4
	"Peaceful"	28394	6	+56%	6

expand and conflict in the international system. Perhaps the foreign conflict behavior of small powers located in a regional subsystem near major powers differs somewhat from the great power model from which Wright, Choucri, North, and Midlarsky worked.

Of course, we have only imperfectly measured one aspect of systemic influences on small power foreign policy. Wilkenfeld et. al (1972) have shown that conflict behavior among Middle Eastern states largely depended on interaction patterns, with one state's hostility depending on the other states' hostility. Occasionally also, domestic conflict or the state's own past conflict were important correlates of its later foreign conflict.

We have not measured the impact of Asian states' prior disputes or clashes on later incidents, but interaction patterns similar to those in the Middle East might exist. If future analysis shows such patterns, we might conclude that growth rates in national military power or technology might be a response to perceived hostility in the environment, as well as contributing to such hostility. If so, the lateral pressure and uncertainty approaches may miss the complexity of international subsystems in which prior behavior feeds into subsequent behavior, and in which political considerations may cause leaders to turn disputes or clashes on and off. How else can we explain the strange "conclusion" of the Iran-Iraq border and Kurdish disputes in the early 1970's? Growth rates and regional competition can explain the timing of such decisions to limited degree; we must consider competing disputes which might draw attention toward or away from certain enemies, domestic political or economic factors including bureaucratic disputes, leadership struggles, and unrest in the military, pressure from third parties and major power patrons, and the totality of cooperative and conflictional relations among states in a regional subsystem in order to better understand their individual disputes, clashes, and

interludes of peace.

FOOTNOTES

1. Wright's predictions regarding distance and war have been adapted by others and tested in the form of Rummel's "field theories." It was generally shown that foreign policy behavior might be linked to the distance between states on certain key attributes (in "attribute space"), with statistically significant, though perhaps somewhat weaker relations between attribute distance and various forms of conflict. (Rummel, 1972, pp. 412 and 409) However, the attributes listed by Rummel do not necessarily correspond to those mentioned by Wright, and with factors such as "Catholic culture," do not help very much in building clear explanations of war. Although Wright did not very clearly specify the types of states or circumstances for which his predictions would hold, it still may be instructive to try to measure his distances and test his predicitons.

2. Note that starts of disputes or clashes were only recorded once so that overlap between these categories and cases of resumptions of the same disputes were eliminated. Also, lateral pressure here is measured in actual yearly figures using our simplified formula, rather than by amount of change in the variables as in the earlier Choucri-North formula.

3. Statistical tests were run to roughly indicate significance even though no sample of states was taken and there can be no assumption of independent cases. This is a study of a population of wars and disputes although it can be argued that the twenty years under study represent a non-random sample of warfare in the Asian subsystem.

4. In conversation with one of the authors, Professor Midlarsky has emphasized the importance of the mathematical properties and logarithmic scale in measurement of uncertainty through number of alliances and borders. Midlarsky feels that other measures, such as coups, are not of much use if they do not conform to those mathematical patterns. However, it strikes the authors that mathematical considerations should not determine the operationalization of political variables.

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