China, China-Watching and CHINA WATCHER

by

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M.I.T.

REFLECTIVE LOGICS FOR RESOLVING INSECURITY DILEMMAS
China, China-Watching and **CHINA_WATCHER***

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September 1980

*The italics of my title refers to computer command used on the M.I.T. MULTICS system for calling up the computer program discussed in this paper. Work reported here has been supported by NSF Grant #7806707 to the Center for International Studies, Massachusetts Institute of Technology. Data on Chinese foreign policy behavior, collected by CACI Inc. have been made available by their sponsoring agency, The Defense Advanced Research Project Agency. For their assistance in all phases of this study I am grateful to Hayward R. Alker, Jr. and Dwain Mefford. Nonetheless, none of these individuals or institutions is responsible for the contents of this paper.
I. INTRODUCTION

This paper is a preliminary report on the construction of a precedent-oriented computer model of China's international conflict behavior. This research has two somewhat separate roots: since it deals with China's international conflict behavior, one root is contemporary China studies; the other is the scientific study of international politics (Zinnes, 1975), especially as it has been developed through the use of computer simulation models. These two fields have rarely been in contact with each other. We believe, however, that the meeting of these two fields is necessary if each field is to advance its understanding of its subject matter. For contemporary Sinology, empirically oriented computer modeling provides a critical opportunity to clarify and check interpretive concepts, thereby enriching the knowledge accumulated by traditional or "wisdom"-oriented approaches; for those claiming that a model-based scientific study of international politics is both possible and desirable, China provides a critical test because China has played an important, even revolutionary, role in the last thirty years, a role not easily accounted for in conventional quantitative terms. In sum, the purpose of our research is to construct scientifically and test a computer model which is relevant to theories of international relations in general and to issues and debates in contemporary Sinology in particular.

As stated at the outset, our computer model of China's international conflict behavior is precedent-oriented. In this sense, the current model, which we call CHINA_WATCHER, is an offspring of the Alker/Christensen/Greenberg precedent-logic model of UN peace-keeping (Alker and Christensen, 1972; Alker and Greenberg, 1976). But there is an important difference. China is not an international organization, whose purpose is to enhance world peace. It is a nation-state capable of having friends and enemies and even capable of initiating conflict. The UN may be viewed as relatively neutral in friend-enemy relations
among nations, but China cannot.

Therefore, difficulties confronting the China modeler are both similar to and different from that of the UN modeler. Is precedent logic the dominant logic in use? Are there any other logics in use? If so, what are the relations among them? What is a good formulation of each logic? Can we consistently aggregate the actions of many different actors into a unitary model of organizational behavior? These and other questions the China modeler shares with the UN modeler. Does a nation-state (like China) operate in ways more or less similar to those of an international organization? How do its key policy-makers perceive the world? If the Chinese use precedent logic, what are the criteria by which they search for precedents? These are some of the questions that CHINA_WATCHER should cope with.

We are far from solving the above questions and others. The following, therefore, is a highly tentative attempt to attack some of the questions. In the next section, we present the current version of CHINA_WATCHER. The third section discusses some preliminary results from runs of CHINA_WATCHER. Limitations and prospects are given in the final section.

II. WHAT DOES CHINA_WATCHER DO?

In essence, CHINA_WATCHER does three things: it perceives new events, understands them, and responds to them according to specified rules. FIGURE 1 presents these operations schematically. The subsequent description of CHINA_WATCHER more or less follows this flow chart.

(1) CHINA_WATCHER sees the world as consisting of friends and enemies.
FIGURE 1

Macro Flowchart of CHINA_WATCHER

start

Initialize Precedent Search Rule, Learning, Forgetting Assumptions, etc.

Initialize World Map

store

Get information on new international conflict

use

store

Search for each actor's position in world map and see if the situation is balanced

use

store

Search for other conflicts currently going on

use

store

Search for previous episodes in the same story

use

store

Search for precedents

use

store

Decide reactions based on the above

store

Update World Map

stop

MEMORY

learning

forgetting
The basic assumption of CHINA_WATCHER with respect to its perception is that it perceives the world as consisting of nations it wants eventually to be able to classify as friends or enemies. As is indicated in the previous section, CHINA_WATCHER differs markedly from the Alker/Christensen/Greenberg UN model in this respect. We should keep in mind that it is only an assumption—this is not the only way to perceive the world. Friendship or enmity may be a false dichotomy in international (and interpersonal?) relations. On the other hand, however, if the reader thinks that our assumption is unfounded, he or she should be reminded that many people and nations actually seem to believe in this dichotomy. In our case, it may suffice to quote the very first sentences of the entire Selected Works of Mao Zedong:

"Who are our enemies? Who are our friends? This is a question of the first importance for the revolution."(MAO, 1965:13)

Given our assumption of a world consisting of friends and enemies, the next question is actually Mao's question above: Who are China's friends and who are China's enemies? If one believes that China's foreign policy is determined by Marxist-Leninist ideology, one will consider imperialist countries and revisionist countries to be China's enemies and (truly) socialist countries to be her friends. If, on the other hand, one believes that her foreign policy is determined by her national interests, one may regard the countries threatening China's security to be her enemies and those opposing the enemies to be her friends. Since these are very prevalent, but opposing viewpoints of China's foreign policy, we plan to construct and explore routines for generating a friend-enemy world map faithful to each viewpoint. But the current CHINA_WATCHER simulation program uses a practical routine, called WORLD, which does not represent either of the above idealtypical viewpoints
of China's foreign policy.

The way WORLD determines friends and enemies is depicted in FIGURE 2. The key variables are each nation's UN vote concerning China's representation in the UN and its diplomatic relations with the People's Republic. The status of those nations which have not achieved independence is determined with reference to the status of their colonial powers in CHINA_WATCHER's world map.

Several other things should be noted in this routine. First, since we use multiple, imperfect indicators of friendship and enmity, we have to consider cases in which both indicators do not point in the same direction, or are not available. In addition, since the United States and the Soviet Union each "enjoyed" the status of main enemy of China in the fifties and in the seventies, respectively, that information, when available, should be used. CHINA_WATCHER looks into each nation's diplomatic relations with these superpowers in the respective decades and uses it better to discriminate among those nation-states recognized by the People's Republic, but not further indicating their political orientation through their UN voting.

To make the scheme more general, we include cases of indifferent and ambiguous status-conferring relationships—two cases in which enemy and friend statuses cannot yet be clearly applied. In other words, we use the four-value system of Abelson and Rosenberg's symbolic psychologic (Abelson and Rosenberg, 1958; see Alker, 1979, also). Thus, we read the Maoist dictum of dividing the world up into friends and enemies pragmatically, not absolutely.

As the reader may have noticed in FIGURE 2, the results of this routine are not yet new statuses for each nation from the Chinese point of view as "friendly," "hostile," "ambivalent," or "indifferent." The end of each tree points to a subsequent routine such as FRIEND1, FOE2, and so forth. This shows that each nation's current status attribute is transformed into one of the four
* This routine is invoked at the end of each year from 1949 to 1978 for updating.

The routines for actual friend, foe, etc. determination are indicated using capital letters at the bottom of this figure; their structures are elaborated in Figure 3 below.
possible statuses by going through WORLD and one of the transformation routines in FIGURE 3. This is because each nation is not a friend or enemy forever; status is in constant change and must be updated. A nation that voted for the PRC in the UN in 1956 may have voted for Taiwan in the following year. Thus, WORLD is essentially an updating routine except when invoked for initialization.

Next, it should be mentioned that the redefining or updating of national positions in CHINA_WATCHER's world map is not only the function of the WORLD routine. Updating may also be the result of Chian's active involvements in international conflicts as perceived by CHINA_WATCHER. The current UPDATE routine is described in FIGURE 4. This routine also invokes the previously defined transformation routines.

Probably the most important and difficult issue in this part of our model is how best to design these transformation routines. Transformation routines should answer the following question: what status does a nation acquire in CHINA_WATCHER's world map if it used to be a "friend" (enemy, ambivalent, or indifferent) and exhibits friendly (antagonistic, ambivalent, or indifferent) behavior toward China? Currently, CHINA_WATCHER has six transformation routines: FRIEND1, FRIEND2, FOE1, FOE2, AMB, and INDIF (see FIGURE 3). The combination of FRIEND1, FOE1, AMB, and INDIF is consistent with Abelson and Rosenberg (1958).

It is perhaps useful to clarify the operation of these transformation routines by comparing this model with Abelson and Rosenberg's psychologic. The fundamental definitions of their four "relations," p, n, o, and a (the positive, negative, null, and ambivalent relations), are expressed in the following addition and multiplication tables (see TABLE 1).

Addition here means the operation used when two (same or different) relations are implied for two objects to be related. TABLE 1 says, for example, if ApB, then ApB, but if ApB and AnB, then AaB, and so on. To put it in more human
FIGURE 3 Procedures for updating friend, foe, ambivalent, and indifferent statuses in China's World map.

FRIEND 1

* start

Is old status "friend"?

Yes

No

Is old status "enemy"?

Yes

No

Is old status "ambivalent"?

Yes

No

Is old status "indifferent"?

Yes

No

new status is "friend"

new status is "friend"

new status is "friend"

new status is "friend"

new status is "ambivalent"

new status is "ambivalent"

new status is "ambivalent"

new status is "ambivalent"

new status is "friend"

new status is "friend"

new status is "friend"

new status is "friend"

* It is assumed actors entering the above two routines have acted in a friendly manner toward China.
Foe 1

Start

Is old status "friend"?
Yes → new status is "ambivalent"
No → Is old status "enemy"?
Yes → new status is "enemy"
No → Is old status "ambivalent"?
Yes → new status is "ambivalent"
No → Is old status "indifferent"?
Yes → new status is "enemy"

Foe 2

Start

Is old status "friend"?
Yes → new status is "ambivalent"
No → Is old status "enemy"?
Yes → new status is "enemy"
No → Is old status "ambivalent"?
Yes → new status is "enemy"
No → Is old status "indifferent"?
Yes → new status is "enemy"

* The actors entering the above two routines have acted in an antagonistic manner toward China.
**FIGURE 3 (concluded)**

**AMB**

```
start

Is old status "friend"?  
  Yes → new status is "ambivalent"
  No → Is old status "enemy"?  
    Yes → new status is "ambivalent"
    No → Is old status "ambivalent"?  
      Yes → new status is "ambivalent"
      No → Is old status "indifferent"?  
        Yes → new status is "ambivalent"

* The actors entering this routine have acted in an ambivalent manner to China.
```

**INDIF**

```
start

Is old status "friend"?  
  Yes → new status is "friend"
  No → Is old status "enemy"?  
    Yes → new status is "enemy"
    No → Is old status "ambivalent"?  
      Yes → new status is "ambivalent"
      No → Is old status "indifferent"?  
        Yes → new status is "indifferent"

* The actors entering this routine have acted indifferently toward China.
```
*This routine is invoked after each event is processed through the routines described in the following.*
### TABLE 1

Addition for Relations*

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### TABLE 2

Multiplication Table for Relations*

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</table>

terms, this table shows, for example, that if $A$ has done a friendly thing to $B$ and $A$ has done a friendly thing to $B$ again, then $A$ is friendly to $B$, but if $A$ has done a friendly thing to $B$ and $A$ has done an antagonistic thing to $B$, too, then $A$'s relations with $B$ are ambivalent, and so on.

Multiplication means the operation used when two (same or different) relations are implied transitively for three objects: if $ApB$ and $BpC$, then $ApC$; if $ApB$ and $BnC$, then $AnC$; if $AaB$ and $BpC$, then $AaC$; and so on. This operation, in a word, is the logic of "one's enemy's enemy is one's friend."

Now, suppose we call an international actor, $A$, "friend" of China if the current relationship between the two is $ApChina$, "enemy" of China if $AnChina$, "ambivalent" actor to China if $AaChina$, and "indifferent" to China if $AoChina$. And suppose an actor has done something good to China, i.e., $ApChina$. What is the new status of these relations and that of this actor from China's point of view? If this actor was originally a "friend," i.e., $ApChina$, then the new status is "friend," too; if it was an "enemy," the new status is an "ambivalent" actor; if it was "ambivalent," then the new status is "ambivalent," too; and if it was "indifferent," the new status is "friend." This transformation is none other than what our FRIEND1 does. In other words, FRIEND1 performs the task represented by the first row of the addition table (TABLE 1); FOE1, the second; INDIF, the third; and AMB, the fourth. Thus, the combination of FRIEND1, FOE1, INDIF and AMB constitutes the addition table.

As the reader may have noticed, in TABLE 1, the ambivalent state is absorbing others; once relations become ambivalent, they cease to change status. As we assume, if China tries to classify all international actors into "friends" and "enemies," an increase in the number of "ambivalent" actors from China's point of view is undesirable; some mechanisms to change "ambivalence" to either "friend" or "enemy" are called for. FRIEND2 and FOE2 are devised for this
purpose. FRIEND2 transforms an ambivalent actor into a friend if it has done something good to China; FOE2 transforms an ambivalent actor into an enemy if it has done something bad to China.

The current version of CHINAWATCHER connects FRIEND2 and FOE2 to UPDATE, which means that an ambivalent actor becomes a friend by standing on the same side in a conflict with the PRC as a primary actor; it becomes an enemy by doing the opposite.

The WORLD routine has connections with FRIEND1 and FOE2. This implies that an ambivalent actor could not become a friend of China by UN vote or other diplomatic means. On the other hand, since this routine is connected with FOE2, an ambivalent actor becomes an enemy of China by the UN vote or other diplomatic means. In other words, it is easier to become China's enemy than to become a friend. Once an actor becomes ambivalent from China's point of view, it cannot return to the status of China's friend by diplomatic means; it has to side with China as a primary actor in an international conflict. It has to show its friendship in deed, not just in words.

Abelson and Rosenberg's multiplication table is not used as extensively as the addition table. But the concern of diplomatic relations with the USSR and U.S. and the colonial powers' UN vote in the case of dependencies in the WORLD routine reveals this logic. If an actor does not have diplomatic relations with either of the superpowers (i.e., it is an enemy of the superpower) since the superpower is the main enemy of China, then that actor is a friend of China. Or, assuming the people in the colony are against the colonial power, then if the colonial power is an enemy of China, the people in the colony are friends of China.
(2) CHINA_WATCHER tries to understand the situation.

In a world of friends and enemies defined and updated by the routines described in the previous subsection, CHINA_WATCHER, tries to "understand" each new international conflict. By "understanding" we mean: 1) recognizing the characteristics of each conflict and 2) locating the current conflict in a historical network of associated conflicts. The first task is carried out by reading the values of the descriptive variables supplied by the user. CHINA_WATCHER does not specify which variables are necessary or which are important. The user should specify the variables according to his/her theory or hypothesis.

The second part of "understanding" is conducted by the routines called CONTEXT and PRECASE. In addition, CHINA_WATCHER finds each party's status in China's world map and determines certain destabilizing propensities in the current situation using a routine called BALANCE. We explain these three routines separately.

The BALANCE routine, as the name indicates, determines whether the conflict situation is balanced in Heider's sense (Heider, 1946, see also Abelson & Rosenberg, 1958, Harary, Norman, Cartwright, 1965, Alker, 1979). For example, if China's friend is in conflict with China's enemy, the situation is balanced. But if China's friend is in conflict with her other friend, the situation is unbalanced. Since multiple actors participate in either side of the conflict, the way to determine the balance is a little more complicated than the above. We have to determine beforehand whether each side in a conflict contains any ambivalent element. If, for example, China's friends and enemies are on the same side of a conflict, that group is ambivalent from China's point of view. (However, since the logic used here to check balance is the same as symbolic psycho-logic, BALANCE can handle this multiple actor issue by invoking FRIEND1, FOE1, AMB, and INDIF routines.)

The CONTEXT routine searches in CHINA_WATCHER's memory to find the
international conflicts which are ongoing when the current case occurs. Chinese policy-makers are modeled this way because not only must they cope with the most recently-occurred conflict, but they also have to cope with unresolved conflicts which have not yet ceased to exist. Naturally it is especially important to see whether there exist very dangerous unresolved conflicts. For example, if there are critical conflicts at hand in which China has to deal with other superpowers, our model should consider the relative importance of the current case, compared with such especially dangerous cases. We have not yet resolved this problem satisfactorily, but a partial answer is given by the routine called ISOAV (see FIGURE 5).

If CONTEXT searches for the historically horizontal context (i.e., co-occurring conflicts), the PRECASE routine searches the historically vertical context, viz., preceding cases which constitute a longer, unfolding "story," with the current case as its most recent episode. For example, when the People's Liberation Army crossed the Yalu River and intervened in the Korean War, the PRC must have regarded this event as the most recent episode of a narrative which probably began with U.S. involvement in the Chinese Civil War and continued as the Korean War broke out, with further chapters including Harry Truman's declared neutralization of the Taiwan Strait, United Nations intervention, and MacArthur's landing at Inchon. To construct a routine that generates a precase history, however, is not as easy as to program CONTEXT. CONTEXT has only to identify currently unfinished cases, but PRECASE has to judge for a current conflict which previous case is the immediately preceding episode in a larger, still unfolding story. The current version of PRECASE performs this task by concentrating on the protagonists. It proceeds by:

(1) picking up the case which ended within a year before the current case takes place and in which at least one primary actor from each side of the conflict
**FIGURE 5**

ISOAV routine to determine whether the context is dangerous to China.

- **Is PRC original party?**
  - **Yes**, conflict occurred in PRC territory or nearby?
    - **Yes**, Is USSR involved in opposition to PRC's interests?
      - **Yes**, Is strategic confrontation potential or substantial?
      - **No**, Is USA involved in opposition to PRC's interests?
        - **Yes**, Is Communist party's physical survival threatened?
          - **No**, Is PRC engaged in actual combat?
    - **No**, more context case?
  - **No**, exit

- **ISOAV = 0**, i.e., context is not dangerous
- **ISOAV = 1**, i.e., the context is dangerous

*The cases entering this routine are chosen by CONTEXT.*
appears in the same side of the current case; (2) choosing the next previous episode which ended within a year before the first preceding episode chosen above and in which the same actor condition is satisfied; (3) repeating this procedure recursively until no further cases satisfy the search rules.

(3) CHINA_WATCHER decides how to respond via precedent search.

After "understanding" a new situation, CHINA_WATCHER has to decide how to respond. The basic assumption of CHINA_WATCHER is: CHINA_WATCHER responds to historically similar situations in similar ways. This assumption seems almost trivial. But by this assumption, we exclude consideration of hypotheses that China has been a "chaotic" or "confused" international actor, hypotheses which for some periods may not be a priori so farfetched. (Behavior not accounted for by our analysis could, of course, be considered "random.") Also, what this assumption means is not so clear unless we specify (1) what is historical or precedential similarity, and (2) what variables should be used to constitute and direct the search for past relevant situations. We deal with the latter problem first.

As is mentioned in the previous subsection, the characteristic variables to be considered by CHINA_WATCHER are specified by the user. In other words, the user plays a vital role in specifying the variables which constitute precedentially relevant features of the present and past situations. As we will report in the next section, we currently use the following variables as candidates: (1) whether China is an original conflict participant; (2) China's military capability vis-a-vis the conflict; (3) the event type of the conflict; (4) whether strategic confrontation is involved; (5) whether the situation is balanced (this is derived from the BALANCE routine); (6) whether the broader, horizontal conflict context is especially dangerous (this is derived from the ISOAV routine); and so on. (For other descriptive variables one might use,
see the data set description in the appendix.)

Although "similarity" is a concept familiar to many natural scientists, our concept of "precedential similarity" is tailored to one special social scientific purpose. This concept is vital to CHINA WATCHER because China is assumed, given a new case, to search for a similar case in the past (a precedent) and then to react in a similar way to the current case. Even though we can specify for our data set all the variables, values of which constitute each new situation, we cannot give a convincing a priori argument for any one precedential similarity search routine. Likewise, the Alker/Christensen/Greenberg's UN model tried three different routines representing three different concepts of precedential similarity: LEX, MAX, and ROT (Alker and Christensen, 1972; see Bloomfield and Beattie, 1971, for comparison). CHINA WATCHER adopts LEX and MAX, but tries MAXFMIN instead of ROT. Each of these initially plausible precedential search routines requires further descriptive elaboration.

For this purpose we start with MAX. This concept of precedential similarity seems almost mechanical. Suppose each case or conflict is described as

\[ C_i = \{V_1, V_2, V_3, \ldots, V_N\} \]

where \( i \) is the case number and \( V_1, V_2, V_3, \ldots, V_N \) are the variables whose specified values constitute the conflict situation. MAX hypothesizes that two earlier cases \( C_j \) and \( C_k \) are equally similar to a current \( C_i \) if the number of the variables characterizing \( C_j \) which have the same values as \( C_i \)'s corresponding variables is the same as that number for \( C_k \). If, on the other hand, the number of variable "matches" between \( C_j \) and \( C_i \) is bigger than the number of \( C_k \) to \( C_i \) "matches," then \( C_j \) is more precedentially similar to \( C_i \) than \( C_k \). In set theoretic notation, if \( \{C_i \cap C_j\} = \{V_1, V_2, V_3\} \) and \( \{C_i \cap C_k\} = \{V_2, V_3, V_4\} \), then \( C_j \) and \( C_k \) are equally similar to \( C_i \), even though the exact variables that
are matched are different. If \( C_i \cap C_j = \{V3, V4, V6, V8\} \) and \( C_i \cap C_j = \{V1, V2\} \), then \( C_j \) is more precedentially similar to \( C_i \) than \( C_k \) because the number of matches in the former is four and that of the latter is two. MAX, in sum, puts equal weight on each variable and does not give any order of importance to the set of variables considered relevant to similarity matching.

LEX, on the other hand, is a more restricted concept of precedential similarity. LEX presupposes an ordered set of variables. In our notation, we must initially order variables so that \( V1 \) is more important than \( V2 \), \( V2 \) is more important than \( V3 \), and so forth. The matching procedure is done lexicographically. If, for example, \( C_i \cap C_j = \{V2, V3, V4, V5, \ldots \} \), \( C_i \) and \( C_j \) are still not similar because \( V1 \), the most important variable, does not match. Another example: if \( C_i \cap C_j = \{V1, V2, V3\} \) and \( C_i \cap C_k = \{V1, V2, V4, V5\} \), \( C_j \) is more precedentially similar to \( C_i \) than \( C_k \) because \( V4 \) and \( V5 \) are irrelevant unless \( V3 \) matches. In other words, a preceding match variable is more important in LEX searching than all the following match variables put together. (If you use MAX in the last example, \( C_k \) would be more precedentially similar to \( C_i \) than \( C_j \).)

Before turning to MAXFMIN, it is necessary to explain the concepts of MIN and FMIN. The MIN procedure specifies the minimum number of matches necessary for two cases to be judged to be similar. This procedure can be used in conjunction with either MAX or LEX. If it is used with MAX (MAXMIN), it has the following meaning. If the given MIN value is, say, three, then matches less than three, e.g., \( \{V1, V2\} \), \( \{V4, V5\} \), or \( \{V6\} \) mean nothing in terms of precedential similarity; they are just dismissed as not being similar. If MIN is used with LEX (LEXMIN), it signifies the following: if the MIN value is, let us say, three, total lexicographic matches less than three, like \( \{V1, V2\} \) and \( \{V1\} \) are disregarded. The FMIN procedure specifies the necessary variables to
be matched for two cases to be judged similar. MIN applied to LEX is, in effect, FMIN because any minimum matches other than the matches in the first fixed number (MIN) of variables has no significance by virtue of LEX procedure. Matches like \{V3, V4, V5\} are not recognized as relevant not by the MIN part but by the LEX part of LEXMIN. To be relevant, matches should always include, say, \{V1, V2, V3\}: minimum matches of fixed variables (FMIN).

The above discussion of MIN and FMIN leads us to MAXFMIN fairly easily. As the name indicates, MAXFMIN is MAX with an FMIN restriction. Since it is FMIN, the number of matches of the fixed variables should be specified. Since it is MAX, it does not differentiate the rest of the variables in terms of importance. Suppose FMIN is \{V1, V2, V3\}. Because of MAX, \{V1, V2, V3, V4\} is the same as \{V1, V2, V3, V6\} or \{V1, V2, V3, V7\}. If, on the other hand, LEXMIN is applied to these three examples, the first is higher in its similarity score than the other two. The latter two are, in LEXMIN, the same as \{V1, V2, V3\}.

Even though we can somehow choose one of the above procedures to obtain similarity scores, we have still other issues to face. The first is whether to include in the precedent search the cases designated by PRECASE as the preceding episodes to the current case in a single unfolding story. The logic used by policy-makers in searching narratives may differ from the logic used in precedent search. We return to this issue again below.

A second issue is how to deal with learning and forgetting. CHINA_WATCHER currently has three options: (1) learning by non-failure; (2) learning by success; and (3) no learning and forgetting. FIGURES 6 and 7 describe (1) and (2) respectively. The logic behind learning procedures (1) and (2) is: a candidate for precedent is more likely to be chosen if its result was non-failure (or success in (2)) than if it ended in failure (or non-success in (2)). This logic is exactly the same as the one used in the UN model. The scoring procedure
**FIGURE 6.** Non-Failure Learning

- Is outcome for PRC unfavorable? Yes
- If so, conflict is policy failure; forget at the specified rate.
- If not, check similarity score unless similar cases between this and the current cases ended with failure.

**FIGURE 7.** Success Learning

- Is outcome for PRC favorable? Yes
- If so, conflict is a success; add points to similarity score unless similar cases between this and the current cases ended with non-success.
- If not, conflict is a non-success; forget at the specified rate.
is also identical: add to the precedential similarity sense an increment such that cases with a minimum match are considered precedentially "closer" than failure (or non-success) cases with matches on all search-directing variables.

As for forgetting, CHINA_WATCHER does more or less the same thing as the UN model. The failure (or non-success) case is forgotten with an exponential decay rate every year. The rate 1.33 means that the precedential similarity score of a failure (or non-success) case becomes 3/4 of its value in the previous year. Non-failure (or success) cases become the same as failure (or non-success) cases after a specified number of unsuccessful precedential applications.

The third issue concerns what CHINA_WATCHER should do if no precedent is found. The current CHINA_WATCHER routine utilizes the concept of unfolding story or narrative consisting of several episodes identified by PRECASE. As anticipated above, we assume that there is a different logic in operation among episodes in a single story. At present, we term this "inertia/escalation logic." The current operationalization shown in FIGURE 8 should not be considered in any way definitive.

But what should CHINA_WATCHER do if no previous episodes are found? Here, we introduce the idea of an initial operational code system into the modeling analysis. In a way analogous to the Alker -Christensen-Greenberg "operational charter," it should be constructed so as to represent precedents accumulated by the Chinese Communists before they succeeded in establishing the People's Republic (Leites, 1951, 1953, 1964; George, 1969). The current version is very simple and depicted in FIGURE 9. Increasing degrees of involvement are assumed with situations ranging from those where the People's Republic is weak, not an original party, nor enticed by anti-imperial war of national liberation, to those where China is relatively strong, an original party to a dispute already
**Figure 8** INERTIA/ESCALATION LOGIC

1. **Start**
2. Is outcome for PRC unfavorable? **Yes**
3. No
4. Is outcome for Chinese client/allies unfavorable? **Yes**
5. No
6. Is outcome for polity of interest to PRC unfavorable? **Yes**
7. No
8. **Do the same action as in the previous episode of this story**
9. **Do one step higher action than in the previous episode of this story unless previous action is combat**
10. **Exit**

* The case entering this routine is the previous episode of the same story chosen by PRECASE.
FIGURE 9  Initial Operational Code System

Is PRC's military capability substantial

No

Is PRC an original party

No

Is conflict national liberation war

No

No Physical Involvement

Action short of combat: no military personal in crisis area

Go beyond simply noting existence of crisis

Yes

Is conflict war or national liberation war

No

Action short of combat: military personal in crisis area

Yes

combat
considered to be a shooting war of some type.

III. HOW WELL DOES CHINA_WATCHER DO?

In this section, we present some results from our trial runs of CHINA_WATCHER. This presentation does not exhaust all the important issues derived from these trial runs, nor does it try to give a definitive interpretation of the results. Its main purpose is to highlight some portions of CHINA_WATCHER's outputs, thereby illustrating the conceptual coherence and empirical validity of its information processing routines.

(1) Overall, CHINA_WATCHER predicts China's international conflict behavior fairly well.

Within the limited number of trial runs, the following combination of options has achieved fairly high prediction success:

MAXFMIN with

(1) learning by non-failure
(2) number of failures to invalidate success: 2
(3) forgetting rate: 1.33/year
(4) lower threshold of precedent score: .5
(5) previous episode in the same story excluded from precedent search
(6) operational code system used if no precedent is found
(7) inertia/escalation logic used if no precedent is found
(8) minimum match: 3
(9) variables:

  i) geographical involvement
  ii) military capability
  iii) type of event
  iv) ambivalence of the situation
  v) strategic confrontation
  vi) actor mix
  (for categories in each variable, see TABLE 1)

Although CHINA_WATCHER predicts three things for each conflict: (1) which side China supports, (2) verbal involvement, and (3) physical involvement, we have overall comparisons of prediction and actual behavior for only the latter two.* Verbal involvement has two categories and physical involvement has five
categories (see TABLE 3). The prediction success for the former is 82 percent and that of the latter is 60 percent. Since random prediction for the former would succeed 50 percent and that for the latter 20 percent, CHINA_WATCHER's prediction success is fairly good. Detailed comparisons can be made by referring to TABLES 4 and 5. The diagonal cells show the cases in which CHINA_WATCHER predicts correctly. The row margin shows CHINA_WATCHER's distribution of different types of involvement. The column margin is the actual China's distribution of types of involvement. As for verbal involvement, CHINA_WATCHER chooses the stronger option slightly more than China actually did. As for physical involvement, CHINA_WATCHER chooses clearer options more often than real China did. Category 1, action short of combat, no detail available, in CHINA_WATCHER's choice is predicted 39 times whereas the category 1 total for actual China is 74.

(2) CHINA_WATCHER deals with many cases fairly plausibly.

In this type of simulation, it is at least as interesting and important to see how each discrete case is treated by the program as it is to examine overall aggregate statistics. Some kind of micro or processual validity issues readily come to mind. Since CHINA_WATCHER "perceives," "understands," and "reacts" to a new situation, in order to see how well CHINA_WATCHER is doing, we have to check these processes in each case. But since it is impossible and

---

*Our current data set does not have China's actual support records. We plan to add this soon. But CHINA_WATCHER's support prediction seems fairly good. For example, in cases like Poznam riots in 1956, or Khrushchev and Eisenhower's meeting at Camp David in 1959, CHINA_WATCHER says that China's attitude toward the situation is ambivalent, which is consistent with the conventional understanding of Sinologists. For much clearer cases, CHINA_WATCHER rarely makes implausible assignment of friend and enemy. This shows that the current versions of WORLD, UPDATE, and BALANCE with several transformation routines are fairly realistic.
### TABLE 3
Variables Currently used by CHINA_WATCHER

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Var 30</td>
<td>GEOGRAPHIC INVOLVEMENT (recoded from CACI data set)</td>
</tr>
<tr>
<td>0</td>
<td>PRC is not an original party</td>
</tr>
<tr>
<td>1</td>
<td>PRC is a original party</td>
</tr>
<tr>
<td>Var 34</td>
<td>CHINESE CRISIS MANAGEMENT CAPABILITY</td>
</tr>
<tr>
<td>0</td>
<td>Negligible/highly limited</td>
</tr>
<tr>
<td>1</td>
<td>Substantial</td>
</tr>
<tr>
<td>Var 12</td>
<td>TYPES OF EVENTS (recoded from CACI's character of events)</td>
</tr>
<tr>
<td>0</td>
<td>Dangerous domestic trends/events</td>
</tr>
<tr>
<td>1</td>
<td>Riot, other civil disorder</td>
</tr>
<tr>
<td>2</td>
<td>Uprising, revolt, insurgency</td>
</tr>
<tr>
<td>3</td>
<td>War of national liberation</td>
</tr>
<tr>
<td>4</td>
<td>Coup d'etat</td>
</tr>
<tr>
<td>5</td>
<td>Structural change(shift in political alignment, formation/dissolution of alliance, dangerous international trend/events)</td>
</tr>
<tr>
<td>6</td>
<td>Border incident, dispute over territory of territorial waters, airspace violations</td>
</tr>
<tr>
<td>7</td>
<td>War(declared or undeclared)</td>
</tr>
<tr>
<td>8</td>
<td>Other -- including foreign intervention, conflict short of war.</td>
</tr>
<tr>
<td>Var 38</td>
<td>AMBIVALENCE OF THE SITUATION</td>
</tr>
<tr>
<td>0</td>
<td>Clear</td>
</tr>
<tr>
<td>1</td>
<td>Ambivalent</td>
</tr>
<tr>
<td></td>
<td>(This variable is generated by the BALANCE routine.)</td>
</tr>
<tr>
<td>Var 15</td>
<td>STRATEGIC CONFRONTATION</td>
</tr>
<tr>
<td>0</td>
<td>no or not applicable</td>
</tr>
<tr>
<td>1</td>
<td>Potential</td>
</tr>
<tr>
<td>2</td>
<td>Actual</td>
</tr>
<tr>
<td>Var 17</td>
<td>ACTOR MIX</td>
</tr>
<tr>
<td>8</td>
<td>Uncodable</td>
</tr>
<tr>
<td>1</td>
<td>Internal</td>
</tr>
<tr>
<td>2</td>
<td>Two or more large powers involved(USSR, U.S. and PRC only)</td>
</tr>
<tr>
<td>3</td>
<td>Large/middle power mix ( Middle: UK, France, FRG, Japan)</td>
</tr>
<tr>
<td>4</td>
<td>Large/small power mix</td>
</tr>
<tr>
<td>5</td>
<td>Middle/small power mix</td>
</tr>
<tr>
<td>6</td>
<td>Small/small power mix</td>
</tr>
</tbody>
</table>
### ACTION/INVOLVEMENT VARIABLES

**1. Var 28 CHINESE VERBAL INVOLVEMENT**

1. Chinese simply note existence of crisis
2. Chinese go beyond simply noting existence of crisis

**2. Var 29 CHINESE PHYSICAL INVOLVEMENT**

0. Uncodable
1. Actions short of combat; no details available (are able to infer that PRC did something but there is not enough, or enough consistent, information to specify what)
2. Actions short of combat; no military personnel in crisis area (i.e. PRC is actively engaged on-site in attempting to influence crisis outcome but no military advisors, etc. directly involved in crisis-related activity)
3. Actions short of combat; military personnel in crisis area (these can be individual advisors, teams, or even regular military units, but PRC military personnel are not engaged in two-sided combat operations.)
4. Combat involving military personnel
TABLE 4  Prediction of China's Verbal Behavior in International Conflicts *

<table>
<thead>
<tr>
<th>Actual Behavior</th>
<th>Prediction</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>note existence</td>
<td>go beyond noting</td>
<td>Total</td>
</tr>
<tr>
<td>note existence</td>
<td>24</td>
<td>39</td>
<td>63</td>
</tr>
<tr>
<td>go beyond noting</td>
<td>29</td>
<td>291</td>
<td>320</td>
</tr>
</tbody>
</table>

Total 53 330 383

PREDICTION SUCCESS: 82 PER CENT

* The results in this table are derived from a simulation run using all the computer routines described in the previous section with the options specified at the beginning of this section (basically MAXFMIN3).
TABLE 5  Prediction of China’s Physical Involvement in International Conflicts *

<table>
<thead>
<tr>
<th>PREDICTION</th>
<th>Uncodable</th>
<th>Action but no detail</th>
<th>Action but no military</th>
<th>Action with military</th>
<th>Combat</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncodable</td>
<td>132</td>
<td>18</td>
<td>26</td>
<td>5</td>
<td>1</td>
<td>182</td>
</tr>
<tr>
<td>Action</td>
<td>29</td>
<td>15</td>
<td>17</td>
<td>12</td>
<td>1</td>
<td>74</td>
</tr>
<tr>
<td>But no</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>detail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>10</td>
<td>5</td>
<td>22</td>
<td>4</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>But no</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no military</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>55</td>
<td>6</td>
<td>67</td>
</tr>
<tr>
<td>With</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>military</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combat</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>177</td>
<td>39</td>
<td>66</td>
<td>83</td>
<td>18</td>
<td>383</td>
</tr>
</tbody>
</table>

PREDICTION SUCCESS: 60 PER CENT

* The results in this table are derived from a simulation run using all the computer routines described in the previous section with the options specified at the beginning of this section (basically MAXMIN3).
inadvisable to look into each case in this short paper, we examine one fairly randomly chosen case for the purpose of illustration.

The case we choose for this purpose is the very last case of our data set: CASE 385 VN PATROL ENTERS PRC(PING ER): FIRES ON KILLS PRC MILITIA.*

Notice that this is one of the cases preceding China's invasion of Vietnam in early 1979. (Our current data set contains international conflicts and events up to the end of 1978.) CHINA_WATCHER processes this new crisis event as follows:

CHINA_WATCHER sees the participants of the event are the People's Republic of China on one side and Vietnam on the other. It finds out that the former is China's friend (of course) while the latter is China's enemy by looking at the world map that the model has generated during this simulated history from 1949. Since it is a conflict between a friend and an enemy, CHINA_WATCHER "infers," the situation is clear (i.e., balanced). Also, CHINA_WATCHER sees that China is an original participant of the conflict (Var 30), that the conflict occurs within the region in which China's military capability is substantial (Var 34), that the type of the conflict is border incident (Var 12), that no strategic confrontation is involved (Var 15), and that this is a conflict between a large power and a small power. Then, CHINA_WATCHER searches if China has other conflicts at hand. It finds three other cases:

(1) CASE 365 INDIA CONT'S TO INTERFERE, AID TIBETAN REBELS: PRC PROTESTS (77-7-22--)

(2) CASE 368 USSR INVOLVED SUBVERSION IN INNER MONGOLIA (77 ---)

(3) CASE 382 3RD VN INVASION-CAMBODIA: PHNOM PENH TAKEN: USSR SUPPORTS (78-12-3--)

*The name of the event is presented in upper case letters. It is usually a very short description of the event from the Chinese point of view. The content of this description is not used by CHINA_WATCHER.
Also, CHINA_WATCHER finds that the current case is the last episode of a narrative consisting of the following episodes:

CASE 341 VN STARTS ANTI-PRC CAMPAIGN; BORDER INCURSIONS INCIDENT (74--78)

CASE 376 VN ACCUSES PRC OF AIR SPACE VIOLATION; PRC DENIES IT (78-7-10)

CASE 379 VN TROOPS VIOLATE PRC BORDER, ATTACK OFFICIALS; EMEPLACE MINES (78-8-25-- 78-9-30)

CASE 381 VN TROOPS AMBUSH, FIRE ON PRC TROOPS; PRC WARNS VN TO STOP (78-11-1)

CASE 383 VN SHIPS ATTACK PRC TRAWLERS; BOARD, LOOT ONE; PRC PROTESTS (78-12-9 -- 78-12-13)

CASE 384 MORE BORDER INCIDENTS: VN TROOPS LAY MINES, FIRE; PRC WARNS VN (78-12-14 -- 78-12-16)

Now that CHINA_WATCHER "understands" the situation, it has to decide how to react by way of finding a similar case in the past. The precedent identified is CASE 349, PRC REJECTS INDIAN CLAIM OF PATROL AMBUSH. The correspondence of variables is perfect and CASE 349 is not a policy failure. Thus, it has the highest precedent score 8. CHINA_WATCHER then says that the PRC will go beyond noting existence of crisis and will be engaged in actions short of combat (military personnel in crisis area), which turns out to be correct.

FIGURE 10 shows the relations of the cases discussed above.

IV. LIMITATIONS AND PROSPECTS

The previous section has shown that the current version of CHINA_WATCHER can generate fairly good predictions of China's international conflict behavior as well as plausible pictures of intermediate processes specifying how China "perceives" and "understands" the situation. This tentative result, however, does not mean that the current version is satisfactory. In fact, this CHINA_WATCHER has produced some implausible results as well. For example, it said
FIGURE 10 Precedential Chains & Narrative Contexts
behind Sino-Vietnamese Border Incident in late December, 1978

<table>
<thead>
<tr>
<th>Narrative Contexts</th>
<th>Precedents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial Operational Code System</td>
</tr>
<tr>
<td>341 (1978) VN STARTS ANTI-PRC CAMPAIGN</td>
<td>16 (1950) UK COMHITS BORDER, AIRSPACE VIOLATION FROM HONG KONG</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>365 (1977) INDIA CONC'T TO INTERFERE, AID TIBETAN REBELS</td>
<td></td>
</tr>
<tr>
<td>368 (1977) VN DENIES INVOLVEMENT IN INNER MONGOLIA</td>
<td></td>
</tr>
<tr>
<td>376 (1978) VN ACUSES PRC OF AIRSPACE VIOLATION</td>
<td></td>
</tr>
<tr>
<td>379 (1978) VN TROOPS VIOLATE PRC BORDER</td>
<td></td>
</tr>
<tr>
<td>381 (1978) VN TROOPS AMBUSH, FIRE ON PRC TROOPS</td>
<td></td>
</tr>
<tr>
<td>382 (1978) VN SHIPS ATTACK PRC TRAWLERS</td>
<td></td>
</tr>
<tr>
<td>384 (1978) MORE BORDER INCURSION</td>
<td></td>
</tr>
<tr>
<td>395 (1978) VN PATROL ENTERS PRC</td>
<td></td>
</tr>
</tbody>
</table>

* A <-> B means A is the precedent of B
* A -> B means A is the previous episode in the same story.
* A --> means A is present when the current case occurs

The numbers in the parentheses are the values of the six variables specified.
that the precedent of the Suez Crisis in 1956 was Khrushchev's attacks on Stalin in the 20th Congress of the Soviet Communist Party. No competent human China watchers would say such nonsense. This stupidity, however, is not deplorable. On the contrary, at an early stage of the research the stupidity displayed by our model sheds light on limitations and defects of the logics embodied in the program of CHINA_WATCHER (cf. Abelson, 1973, regarding the need for semantic structure). In this sense, detailed analyses of poor results are called for. Since we have not finished the analysis of residuals, we cannot pinpoint what went wrong. Therefore, in the following, we would like to point out some relatively more general and conceptual issues instead.

First, there is an issue as to what is the dominant logic in the cognitive process of decision-makers. Our current CHINA_WATCHER uses precedent logic as the dominant logic with inertia/escalation logic as an auxiliary one. In other words, we consider the assumption, similar reactions in similar situations, more important than the logic which operates in a continuing story of conflicts between the same two actors. But we can reverse the order. We can construct a model which uses the inertia/escalation logic as the basic one with the precedent search as an auxiliary logic.

In any case, however, we should take the inertia/escalation logic more seriously. Our current version (FIGURE 8) seems too simple and may be a cause of some portion of the stupidity displayed by CHINA_WATCHER. Literature on this logic is not lacking. The central concern of Richardsonian arms race models is this logic. The literature on sequential prisoners' dilemma is also relevant (Rapoport and Chammah, 1965; Emshoff and Ackoff, 1971).

Second, precedent logic itself needs more conceptual clarification. We have summarized our current view of precedential "similarity" in the second section. Alker/Christensen/Greenberg's UN simulation suggests that LEXMIN is
better than MAX. Our tentative results suggest that MAXFMIN performs better than MAXMIN. Both results indicate that somehow FMIN specification is necessary. Active discussion of the concept of precedential "similarity" in cognitive psychology and artificial intelligence is relevant to our formulation and reformulation of the concept of precedent (Winston, 1977, 1979; Rosch, 1977; Tversky, 1977).

Third, there is also the very important issue of system change. The current version has only incremental learning mechanism as in Alker-Christensen-Greenberg's UN model. Also, we assume that the selected variables that China uses to define and understand the situation are the same throughout the history of the People's Republic. This simplification is questionable. Some characteristics of conflict may be salient in certain periods but insignificant in others.

Finally, as stated at the outset of the paper, we would like to make our CHINAWATCHER relevant to the debates in contemporary Sinology. The current version of CHINAWATCHER does not represent any particular school in the field faithfully. We have four debates or dichotomies of images in mind: (1) ideology vs. national interests; (2) hard line (radical) vs. soft line (moderate); (3) influence of domestic policy on foreign policy vs. no influence; and (4) oscillation vs. secular change. An attempt to reformulate these debates so that they fit into the framework of CHINAWATCHER is presented in the appendix.
APPENDIX I. DATA

We use CACI's data set of crises of concern to the People's Republic of China from 1949 to 1978, compiled under the sponsorship of Defense Advanced Research Projects Agency. Detailed description and some analyses of the data are found in CACI (1979). The following is a brief description of the criteria to select events.

Crises of concern to the People's Republic of China are defined as:

Events involving foreign nations (internal or international), involving conflict (violent or nonviolent), significant trends, and "structural" changes that might negatively affect Chinese political-military interests, and that are cited in certain classes of Chinese sources.

The sources used can be sorted into the following categories:

(1) Periodicals (Peking Review and People's China);
(2) Chinese "state of the world" messages (speeches in the Communist Party's National Congresses);
(3) Chinese books and pamphlets dealing with international events;
(4) Chronologies published by the Chinese.

The following auxiliary criteria are also used to select events:

(1) All cases in which China was directly involved and/or expressed considerable interest were included;

(2) Cases in which the Chinese were likely to have at least a strong indirect interest were always included if at least one of three conditions held:
--- States along or near the Chinese border were involved
--- Communist parties or regimes were involved
--- Overseas ethnic Chinese were parties to the incidents.

The descriptors to characterize each case are the following:

1. Record identifier
2. Initiation date of crisis
3. Termination date of crisis
4. Crisis duration
5. Crisis location by JCS region
6. Geopolitical location
7. Character of events  
8. Scope  
9. Level of violence  
10. Strategic confrontation  
11. Perceived threat to Communist party/regime/movement  
12. Actor mix  
13-22. Key individual actor codes
   a = USSR  
   b = U.S.  
   c = other Western countries  
   d = India  
   e = Taiwan  
   f = Japan  
   g = Vietnam  
   h = other Southeast Asian countries  
   i = Indonesia  
   j = Korea  
23. Chinese verbal involvement  
24. Chinese physical involvement  
25. Geographic involvement  
26. Consolidated involvement  
27. Chinese objectives with respect to in-theater supported set  
28. Chinese objectives with respect to in-theater opposed set  
29. Chinese crisis management capabilities  
30. Crisis outcomes for the PRC  
31. Crisis outcomes for Chinese clients/allies  
32. Crisis outcomes for polities of interest to PRC

In addition to the above CACI data set, we use two other small data sets: one contains the exact names (i.d. numbers) of the actors who are involved in each case; the other contains 168 nations' independence status, diplomatic relations with the PRC, the USSR, and the U.S., and UN votes on the China issue for each year from 1949 to 1978. Actor names for each case are compiled from the case descriptions in CACI (1979). The sources of the latter data set are the following:

(1) independence status -- Bacheller (1979)  
(2) diplomatic relations with PRC -- Scherer (1978a)  
(3) diplomatic relations with USSR -- Scherer (1978b)  
(4) diplomatic relations with U.S. -- Plischke (1975)  
(5) UN vote -- Miyazaki (1975)
### APPENDIX II  Four Dichotomies on Images of China as Intl. Actor

<table>
<thead>
<tr>
<th>Questions to be answered</th>
<th>Ideology vs National Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. World consisting of friends &amp; enemies?</td>
<td>I. yes</td>
</tr>
<tr>
<td>1. Criteria of friends &amp; enemies</td>
<td>1.1) Friends - Marxist, Anti-Imperialist countries, peoples; enemies - Imperialists, revisionists, their lackeys</td>
</tr>
<tr>
<td>1) Definition of friends &amp; enemies</td>
<td>2) enemy/enemy is friend, etc. (?)</td>
</tr>
<tr>
<td>2) Relationships among friends &amp; enemies</td>
<td>2. rarely discussed</td>
</tr>
<tr>
<td>2. Resolution of Ambivalence in Perception</td>
<td>2. rarely discussed</td>
</tr>
<tr>
<td>1) Simultaneous ambivalence — what to do when an actor does both friendly &amp; antagonistic action to China?</td>
<td>1) Friends — those who would help China when its security is in danger</td>
</tr>
<tr>
<td>2) Lagged ambivalence</td>
<td>2) Enemy's enemy is friend, etc. (?)</td>
</tr>
<tr>
<td>a) What to do when a friend does an antagonistic action to China?</td>
<td></td>
</tr>
<tr>
<td>b) What to do when an enemy does a friendly action to China?</td>
<td></td>
</tr>
<tr>
<td>c) What to do when an ambivalent actor from China's point of view does either a friendly or antagonistic action to China?</td>
<td></td>
</tr>
<tr>
<td>3) Ambivalence in the conflict situation — what to do when the situation is ambivalent, e.g. both protagonists are China's friends?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Similar reactions to similar situations?</th>
<th>II. yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do reaction patterns change? If so, what brings about it?</td>
<td>1. rigid believer of this image would say &quot;no&quot;</td>
</tr>
<tr>
<td>2. Definition of &quot;similar situations&quot;</td>
<td>2. a) Actors (Imperialists, etc.)</td>
</tr>
<tr>
<td>a) Content of &quot;situations&quot;?</td>
<td>Type of Events (National Liberation War, Revolution are important)</td>
</tr>
<tr>
<td>b) Criteria of &quot;similarity&quot;?</td>
<td>Threats to China are important Geography</td>
</tr>
<tr>
<td>3. Reaction pattern in uncertainty, i.e. if &quot;similar&quot; case is not found.</td>
<td>b) Not clear</td>
</tr>
<tr>
<td></td>
<td>c) Not clear</td>
</tr>
<tr>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Hard-line (radical) vs Soft-line (moderate)</strong></td>
<td><strong>Domestic-Intl Linkage vs No Linkage</strong></td>
</tr>
<tr>
<td>I</td>
<td>I not directly applicable</td>
</tr>
<tr>
<td>1) no clear def.</td>
<td>(content of the Linkage is often the dichotomy of (1) or that of (2). For example, if domestic policy is hard-line, then foreign policy is hard-line or ideology-directed, etc.)</td>
</tr>
<tr>
<td>2) enemy's enemy is friend, etc.</td>
<td>I not directly applicable</td>
</tr>
<tr>
<td>3) if both parties are friends, one of them is enemy in reality. If both parties are enemies, take advantage.</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>I</td>
<td>yes</td>
</tr>
<tr>
<td>II</td>
<td>yes</td>
</tr>
<tr>
<td>I</td>
<td>yes</td>
</tr>
<tr>
<td>1) no clear def.</td>
<td>1) no clear def.</td>
</tr>
<tr>
<td>2) enemy's enemy may not be friend, etc.</td>
<td>2) enemy's enemy may not be friend, etc.</td>
</tr>
<tr>
<td>3) if ambivalent, friend</td>
<td>2) if ambivalent, wait and see</td>
</tr>
<tr>
<td>3a) friend becomes enemy</td>
<td>2a) wait and see</td>
</tr>
<tr>
<td>b) enemy is enemy whatever it does. Be more suspicious</td>
<td>b) enemy becomes friend</td>
</tr>
<tr>
<td>c) no ambivalent actor in this image</td>
<td>c) ambivalent actor becomes friend if it does friendly action, it becomes enemy, if it does antagonistic action</td>
</tr>
<tr>
<td>3) if both parties are friends, one of them is enemy in reality. If both parties are enemies, take advantage.</td>
<td>3) wait and see, be cautious</td>
</tr>
<tr>
<td>II</td>
<td>yes</td>
</tr>
<tr>
<td>1 rigid believer of this image would say &quot;no.&quot;</td>
<td>1 rigid believer of this image would say &quot;no.&quot;</td>
</tr>
<tr>
<td>II</td>
<td>yes</td>
</tr>
<tr>
<td>I</td>
<td>yes</td>
</tr>
<tr>
<td>1) not clear</td>
<td>1) not clear</td>
</tr>
<tr>
<td>2) a) domestic situation</td>
<td>2a) other than domestic situation</td>
</tr>
<tr>
<td>b) mass mobilization, leadership change, economic situation etc.</td>
<td>b) not clear</td>
</tr>
<tr>
<td>c) not clear</td>
<td>c) not clear</td>
</tr>
<tr>
<td>II</td>
<td>yes</td>
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<tr>
<td>II</td>
<td>yes</td>
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<td>yes</td>
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<td>II</td>
<td>yes</td>
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<tr>
<td>II</td>
<td>yes</td>
</tr>
<tr>
<td>Oscillation vs Secular Change</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
</tr>
<tr>
<td>I not directly applicable</td>
<td></td>
</tr>
<tr>
<td>(the content of oscillation may be hard - soft or ideology - national interests, etc.)</td>
<td></td>
</tr>
<tr>
<td>II yes</td>
<td></td>
</tr>
<tr>
<td>1 yes (change between two lines) (case is not clear, often domestic change)</td>
<td></td>
</tr>
<tr>
<td>2 a) periods (radical period, moderate period, etc)</td>
<td></td>
</tr>
<tr>
<td>b) not clear</td>
<td></td>
</tr>
<tr>
<td>c) not clear</td>
<td></td>
</tr>
<tr>
<td>II yes</td>
<td></td>
</tr>
<tr>
<td>1. yes, case is not clear, domestic secular change, or learning, etc.</td>
<td></td>
</tr>
<tr>
<td>2 a) not clear</td>
<td></td>
</tr>
<tr>
<td>b) not clear</td>
<td></td>
</tr>
<tr>
<td>c) not clear</td>
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</tbody>
</table>

As for the second dichotomy, in addition to the standard works cited above, Eto and Okabe (1969), Okabe (1976), and Zagoria (1962) may be consulted.

Linkage between domestic policy (situation) and foreign policy are discussed by Dutt (1966), Halperin and Perkins (1965). There are some quantitative empirical studies on this issue: Onate (1974), Liao (1976), Whiting (1979).

Oscillation vs. secular changes are often discussed in the field of domestic politics: Skinner and Winckler (1969), Nathan (1976), Winckler (1976), Hiniker and Perlstein (1978). But in the field of foreign policy, arguments for oscillation are made by, for example, Eto and Okabe (1969), Okabe (1976), and Wang (1980).

In addition to the literature concerning the four dichotomies, it is in order to cite some important works on belief structure, world view, and conflict behavior, since our computer model is an attempt to explain Chinese international conflict behavior by modeling Chinese policy-makers' cognitive process. Schurmann (1974) is very important. Bobrow, Chan, and Kringen (1979) is a most recent and comprehensive attempt to codify China's belief structure. Whiting (1960) and Whiting (1975) are both important case studies.
REFERENCES


