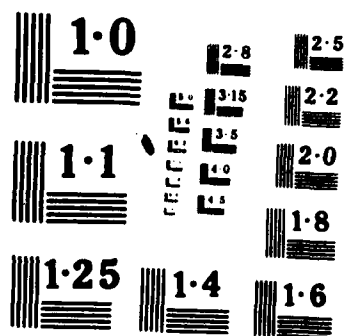# Concepts and Models of Escalation

Paul K. Davis, Peter J. E. Stan

A Report from
The Rand Strategy Assessment Center

Rand

R-3235

Concepts and Models of Escalation

Paul K. Davis, Peter J. E. Stan

May 1984

A Report from
The Rand Strategy Assessment Center

PREFACE

This report reviews Soviet and Western concepts of escalation as discussed in the various nations' unclassified military and political literature. It proposes an intellectual framework for constructing and evaluating alternative escalation models. The report should be of interest to strategists, war gamers, and modelers.

A.

iii

SUMMARY

OBJECTIVES

This study has both methodological and substantive objectives. It develops a *framework* within which to discuss alternative models of the escalation process in plausible superpower conflicts. It reviews both Soviet and Western thinking (to the extent that it can be inferred from unclassified sources), describes that thinking within the framework, and provides a *guide* for writing escalation-related decision rules to be used in analytically oriented automated war games. When developed in future work, the escalation rules could be part of a larger artificial-intelligence model describing possible Soviet and U.S. decision patterns at the national command level, a model that could substantially improve capabilities to explore alternative theories of national crisis behavior analytically. Without a conceptual framework to guide rule development, any such models would be disorganized, imbalanced, and unreviewable.

The framework developed here is intended to

- Have universal potential (i.e., applying to U.S. or Soviet decisions, or to the decisions of any entity with choices about level and location of combat);
- Clearly identify U.S.-Soviet and NATO-Soviet asymmetries;
- Allow for varied assumptions about U.S. and Soviet behaviors; and
- Provide a natural logic flow for decision rules.

We believe the methodology will have value to both strategists and modelers. Moreover, once applied it will represent a significant advance in artificial intelligence because of the complexity of the problem treated.

Although powerful, the tools available from artificial intelligence cannot themselves provide the *substantive* inputs on national decision-making. This study also provides some of that substantive input for the problem of escalation. We have concerned ourselves with both Soviet and U.S. decisionmaking but have focused more heavily on the former—in part because it is essential to consider not only the Western theories with which Americans tend to be familiar but also the very different views held by the Soviets. We have also drawn distinctions between the U.S. behavior suggested by published NATO doctrine and the U.S. behavior often assumed in unclassified U.S. studies.

NATURE OF THE MODEL

As a result of this research the methodology has several notable features:

- A scope that includes both geographic escalation (spreading, or what is sometimes called expansion) and escalation in the nature of war (conventional, chemical, biological, tactical nuclear, . . .);
- Distinctions between decision processes focused on signaling and processes focused on warfighting;
- Distinctions between decision processes based on qualitative judgments and quantitative calculations;
- Mechanisms permitting tentative decisions based on relatively crude assessments and national propensities to be overridden on the basis of detailed projections of likely opponent response and war outcomes;
- Mechanisms allowing major as well as incremental escalatory and deescalatory transitions;
- Consistent with suggestions by Rand colleagues Benjamin Lambeth and Arnold Horelick, complex Soviet and U.S. behavior patterns sensitive to details of current context and some aspects of "history," thereby allowing a single model of the Soviet Union, for example, to display militarily doctrinal behavior in some instances and very different behavior in others;
- Consistent with ideas discussed in Glaser and Davis (1983), an approach reflecting *uncertainties* in decision rules and such escalatory factors as misunderstandings, misperceptions, force-structure instabilities, and the changes in values occurring as conflict continues; and
- Explicit allowance for a reproducible but probabilistic treatment of decision rules—something virtually required even in a largely deterministic war game because of the importance of and uncertainty about escalatory decisions.

NEXT STEPS: STEP-BY-STEP METHODOLOGY FOR RULE-WRITING

The next step in our work will be both painful and interesting: writing decision rules for all situations in the conceptual framework, taking into account the various considerations highlighted in the report. Moreover, we will need *alternative* rule sets reflecting uncertainties

about Soviet and U.S. behavior. That effort will occupy us through most of 1984 and will reflect disparate views. Section VI describes a step-by-step methodology for writing rules. It asks a given analyst writing rules to construct a state space within which to discuss transitions. Computer aids should allow the analyst to focus efficiently on theaters and levels of conflict of his own choosing. The methodology then asks the analyst to work with a particular image of the Soviet Union or the United States and to write rules for all the transitions he considers plausible within the state space. In writing the rules, the analyst will be provided standard menus of issues to consider in each situation, again with automated aids to improve efficiency and flexibility. The analyst's output should be rules for particular transitions or sets of transitions in the form of decision tables or decision trees. These will be reviewed and translated into computerized rules in an English-like format.

The advantage to the methodology of Sec. VI is its relative comprehensiveness. Its disadvantage is that writing rules systematically will take many months. Moreover, the rule sets developed will be directly applicable only to a limited (albeit substantial) range of scenarios. Finally, of course, we consider the rules to be analytic constructs capable of providing insight and plausible inputs to war games. They will not, however, provide an "answer machine" to resolve fundamental uncertainties.

SUBSTANTIVE CONCLUSIONS ABOUT ESCALATORY BEHAVIOR

Although work on escalation modeling will continue for some time, certain observations are worth making on the basis of our work to date. First, some general comments:

- Decision rules must reflect essential *qualitative* features of context. Escalatory behavior would probably depend upon aspects of history and the degree to which "other" events worldwide have created a truly threatening environment. Debates about Soviet or U.S. escalatory behaviors that fail to define the environment are doomed to create dissonance and heat, but little light.
- Decision rules based solely on doctrinal behavior as inferred from military writings and exercise practices would be a poor basis for analysis, as would rules based solely on Western concepts and mirror-image thinking. Which would be worse would depend on the qualitative context.

Second, some comments specifically about Soviet escalatory behavior and probable political strategies related to escalatory concerns. We emphasize that those comments represent *our* views while the RSAC models can and shall represent diverse views.

- Soviet escalatory behavior would probably be more or less consistent with *doctrine* in an "ideal war" with clear-cut issues and unmistakably fundamental stakes (i.e., a war in which the "Western imperialists" invade the Warsaw Pact in the ultimate showdown between the socialist and capitalist camps).

- In more plausible conflicts Soviet behavior might well be complex and might even include some of the limited actions they deplore in their official writings. The Soviets are fully aware of the subtleties discussed by Western strategists and have considered having to deal with them.

- We would expect complex behavior because the Soviet Union has no illusions about the horrors of general nuclear war. The Soviets want to avoid war with the United States in the first place, would go to considerable lengths to avoid a war in Europe, and would be altogether unwilling to find themselves in an unnecessary nuclear conflict. Thus, we should not expect to see fatalistic Soviet escalatory behavior such as that suggested by much of the doctrinal writing until and unless they perceive themselves highly threatened.

- Unfortunately, it is not so difficult as one might think to imagine such circumstances. The Soviets could perceive themselves highly threatened after a failed adventure met by the West with short-term military actions and a general mobilization suggesting longer-term actions. It is also well known that the stakes perceived by nations increase dramatically once conflict begins.

- Because the Soviet image of war and its associated precepts is highly developed and deeply ingrained, we believe that if they should find themselves unacceptably threatened and without political mechanisms for resolving the problem, they would proceed to fight as they have trained. This would mean a strong predisposition toward decisive action, maintaining the initiative, and *destroying* the opponent. NATO's predisposition is the opposite—toward incremental measures to reestablish deterrence. The asymmetry of styles could be a major factor in some conflicts.

- Similarly, it would not be surprising to see U.S. delays in taking measures to prepare for nuclear warfighting—delays probably based in part on concerns about generating provocative

signals as well as domestic chaos. By contrast, we would expect the Soviets to take such measures as soon as they considered the likelihood of general war to be substantial (e.g., at the beginning of a European war, even if they hoped the war would remain conventional). This asymmetry could lead to very different vulnerabilities at key decision points.

- Because the Soviet Union is so concerned about avoiding general nuclear war and now has developed an impressive capability for conventional conflict while eliminating NATO advantages at higher levels of conflict, it is predictable that Soviet long-term grand strategy will include a continuing attempt through all political and covert means to convince Western Europeans to: (a) adopt a no-first-use policy; and (b) to adopt a policy of no provocative measures in times of crisis or conventional conflict. The Soviet purpose (regardless of other possible merits of such policies) would be to improve the likelihood of receiving usable strategic warning before a NATO first use by making that first use more difficult.

- On a different but nonetheless important plane, we note that the Soviets do not appear to regard chemical warfare as "escalatory" in the same way as nuclear use. Although it is altogether unclear whether they would use chemical weapons first in a European war, the issue appears to be for them more nearly one of tactics—with chemicals having some advantages and disadvantages. This has important implicatıons for NATO forces, which are poorly equipped and trained for chemical warfare, and which may be highly dependent upon airpower that could be suppressed by chemical attacks. We do not believe that suggestions that NATO would respond to chemical use with nuclear weapons have the ring of credibility in the 1980s, although the Soviet may be less sanguine.

Finally, some comments about possible U.S. (and NATO) behavior:

- Too little attention has been paid to the differences between U.S. strategic nuclear doctrine and NATO doctrine for theater nuclear forces. The United States has increasingly based deterrence on the capability to defeat militarily any Soviet efforts to achieve advantage through warfare. By contrast, NATO policy and war planning are still constrained by the same concepts that the United States rejected years ago for its strategic nuclear doctrine. NATO is not well prepared to fight a Euro-

pean war should deterrence fail. To that extent, the deterrent itself is open to question.

- U.S. escalatory behavior would be strongly coupled to the behavior of our Western allies—by virtue of alliance agreements, training, mindset, and planning.
- The physical capability exists for the United States and NATO to act in more militarily decisive ways than have been customarily discussed in NATO planning. Refining that capability—which would require improved command-control— remains a controversial issue within the alliance.
- This study does not discuss recent developments in U.S.-only planning for intercontinental nuclear war. In general, however, it can be said that despite efforts to assure continuing command-control, U.S. concepts regarding escalation are still highly consistent with long-standing Western deterrence theory, with heavy emphasis on limited actions intended to bring about an end to war. Such an approach has much to recommend it in all circumstances in which it is plausible that war can be contained. It also implies an incrementalism that sacrifices initiative and encourages procrastination—an incrementalism that could obviously prove dangerous should the war *not* be containable.

Overall, our review has impressed us with the significant divergencies between perceptions and the apparent realities regarding national views of escalation. For example, the Soviets appear to be more inclined to recognize thresholds than is usually assumed (primarily, in our view, because of favorable trends in objective factors such as conventional strength and the nuclear balance). At the same time, peacetime NATO planning differs radically from U.S. strategic doctrine and is even more incrementalist than is commonly recognized. Since the scenarios the two sides use in their peacetime planning are so disparate, it is difficult to foresee what would happen should a real conflict develop. Overall, however, the Soviets at this point have advantages in flexibility because they have considered and practiced for both constrained and unconstrained warfare.

In closing, we would observe that many Western writers are likely increasingly to argue for a broad range of arms control and self-restraint measures designed to enhance crisis stability by avoiding provocative measures. The basic idea is sound and worthy of serious consideration. However, because such measures can work against survivability and military effectiveness—especially in the presence of strategic deception and one-sided compliance in crisis—and by virtue of our

review of escalation issues and related Soviet-Western asymmetries, we conclude that such initiatives should be approached with caution and assessed in game-based analysis with inputs from senior operationally oriented military officers. Such analytically oriented war gaming could also shed considerable light on the recently expressed hypothesis that command-control problems have created highly unstable theater and intercontinental force postures (Bracken, 1983; Steinbruner, 1984).

ACKNOWLEDGMENTS

CONTENTS

Appendix

FIGURES

I. INTRODUCTION

OBJECTIVES AND SCOPE

This study describes a conceptual decision model for treating escalation processes in the automated war gaming of the Rand Strategy Assessment Center (RSAC).[1] It also summarizes much of what is known about Soviet views on escalation and reviews, albeit briefly, U.S. and Western European views. The study's purpose is to provide a logical structure for writing decision rules, a structure that would assure some level of coherence and completeness while encouraging rule writers to consider specific issues and to keep in mind asymmetries in U.S., Western European, and Soviet thinking. Without such a structure rule-writing would be chaotic, incomplete, and unreviewable.

Although our original intention was to limit discussion to nuclear escalation and doctrinal thinking, we have found it necessary to broaden the model to consider simultaneously geographical escalation ("spreading") and escalation in intensity and weapons type, and to do so in a way that applies equally well to the United States and the Soviet Union. The striking asymmetries in U.S., Western European, and Soviet theories and plans regarding escalation emerge as special cases following readily from a few key assumptions. The equally striking potential asymmetries between declaratory plans and actual decisions in conflict also emerge naturally under reasonable assumptions. One of the conceptual model's principal virtues is that it can generate very different U.S. or Soviet decision patterns depending on details of context: The Soviets will not necessarily follow a doctrinal path for warfighting,[2] and the United States will not necessarily be paralyzed if deterrence fails.

---

[1] For background on the RSAC's general objectives and approach, see Davis and Winnefeld (1983) and Appendix A of this study. For a previous discussion of escalation issues and related RSAC challenges, see Glaser and Davis (1983).

[2] By *military doctrine* we mean the "accepted, official views" regarding the character of modern war, the appropriate methods of force employment, and the economic and moral preparation for war of the country and its armed forces. This approximates the Soviet definition (Sokolovskiy, 1968:38). A nation's military doctrine is seldom explicit *and* unambiguous, but it can be inferred from the body of authoritative writings, force structures, and patterns of training. Soviet military doctrine is the best defined, NATO doctrine somewhat less so, and U.S. doctrine rather ambiguous. By no means is it likely that either side will follow doctrine slavishly in war, but it is surely the most appropriate *baseline* for analysis, since it is the guiding force behind actual day-to-day war-planning.

Although the study provides a reasonably general and flexible structure, it represents work completed as of early 1984 in an ongoing effort. With only a few exceptions it provides substantially more detail on the doctrinal behavior of the Soviet Union with respect to nuclear escalation than on the several other issues (nondoctrinal behavior, geographical spreading, escalation below the nuclear threshold, and U.S. behavior). We are issuing the study now because it represents the point of departure for a period of actual rule-writing that will probably take many months.

PREVIEW

It is important to understand the study's structure before proceeding. To build a rule-based model of U.S. and Soviet escalatory behavior, one needs a logical framework identifying the range of situations for which rules are needed, key issues to be considered in writing those rules, and fundamental uncertainties in national behaviors to be reflected in *alternative* rule sets. Such a logical framework is naturally based on *states and levels of conflict*, something generalized from the concept of escalation ladders. Section II reviews the classic Western concept of escalation ladders, notes its weaknesses for two-sided war games intended to reflect Soviet-Western asymmetries, and then develops a more appropriate framework. As developed and used, the generalized concept is neither Western nor Soviet in slant. Instead, it is an analytic construct necessary for modeling and rigorous discussion.

Sections III and IV compare Western and Soviet concepts of escalation. They draw on military writings, and the standard planning scenarios reflected in those writings and in both force structure and exercises, to illuminate U.S.-Soviet and NATO-Soviet asymmetries. The discussion then treats some of the qualifications appearing in the sides' respective literature and practice, qualifications indicating that the theorists of both sides recognize the arguments of the other side and are by no means certain whose model of reality would be the more accurate in war. Section IV also examines the two sides' apparent images of the variables determining escalation, variables that should be highlighted in our decision rules. Here again, U.S.-Soviet (and NATO-Soviet) asymmetries are strong but not absolute.

Section V draws upon the issues of preceding sections to sketch out a conceptual escalation model. It then provides a simplified example of how the model might work in a particular scenario. Finally, Sec. VI describes a methodology for actually writing decision rules coherently. We intend to employ that methodology in subsequent work in 1984.

II. STATES AND LEVELS OF CONFLICT

> Soviet military strategy sees a future war ... as a decisive
> clash ... of unprecedented scope ... it will be conducted without
> compromise and will pursue the most decisive ... goals.
>
> Marshal Ogarkov (1979)

> War, of course, may be limited in a great many ways and degrees. It
> may be restricted in ... time ... area, number of participants, and
> weapons. Certain targets may be declared out of bounds. ...
> Despite the talk of absolute or total conflict, most wars, in fact, have
> proceeded under some definite constraints.
>
> William W. Kaufmann (1956:108)

> There is a good chance that any U.S.-Soviet nuclear exchange would
> escalate out of control. ... But ... imagine a military planner or
> political officer who had to tell a President who asked for options
> (other than a full-scale response) that there were no such plans. ...
> Should a nuclear war begin, it is the responsibility of ... authorities
> to try to limit its damaging effects.
>
> Harold Brown (1983:80)

BACKGROUND

Kahn's Escalation Ladders

The subject of escalation has long fascinated Western defense
analysts, especially since the advent of nuclear weapons. To some
extent, its study arose in reaction to the concept of "all-out" war so
prevalent during and immediately after the world wars. It was neces-
sary to rediscover the fact that wars have not always been viewed as
all-or-nothing events and that failure to analyze options for a range of
circumstances could severely undercut Western interests in time of
crisis or conflict. On the other hand, plans formulated with faith in
war limitation in accordance with Western concepts could lead to
disaster should the Soviets choose to fight with a different concept of
war.

In any case, the term "escalation" first appeared in the Western
strategic literature in the 1950s, apparently in Britain (Freedman,
1981:210). By the late 1950s and early 1960s, the term had assumed

3

two meanings. The first defined escalation as a type of bargaining behavior whereby a belligerent deliberately resorts to heightened levels of violence or broadened areas of dispute and thereby raises the stakes of a conflict. As such, this concept was a forerunner of Schelling's notion of "compellence," since the increased stakes are intended to force the opponent to reevaluate his behavior and make it conform to that desired (Schelling, 1966:70). The second early concept of escalation, on the other hand, conceived of it as an involuntary process whereby belligerents find themselves fighting a war of ever-increasing scope or intensity (Freedman, 1981:210-211).

Although we shall discuss some of the mechanisms of escalation in Secs. III and IV,[1] we are concerned here with an outgrowth of the early theoretical work focused on the problem's "structure," and in particular on the subject of conflict levels, stages, or states. While Schelling's work on escalation was probably the most influential overall, the preeminent work on structural issues was that of Herman Kahn, which culminated in the mid-1960s with his book *On Escalation: Metaphors and Scenarios* (Kahn, 1965). Kahn's definition of escalation was broad, subsuming both of the above concepts: Escalation is "an increase in the level of conflict in international crisis situations." His metaphor for escalation was a ladder with a number of rungs denoting the various levels of conflict as shown in Figs. 1 and 2 for ladders with 16 and 44 rungs, respectively.

Kahn's ladders emphasize the *structural* aspect of escalation rather than the procedural, as can be seen by noting the absence of both words conveying intentions in Figs. 1 and 2 and mechanisms for moving between rungs. Kahn *intended* his ladders to be objective—i.e., the rungs of the ladder were to represent levels of conflict that any reasonable person would agree might occur. To be sure, there was some ambiguity about the order of rungs, but Kahn did not require that his ladders be uniquely correct. He was largely concerned with providing a structure within which to do more nearly rigorous thinking about the unthinkable.

Problems with the Kahn Escalation Ladders

Kahn recognized intellectually that his ladders represented a Western view of reality. For example, he states (Kahn, 1962:218):

---

[1]See also Glaser and Davis (1983), which reviews nuclear escalation mechanisms, including mechanisms dependent on misperceptions, errors, and fatalism.

```
16   Aftermath
15   Some Kind of "All-Out" War
14   "Complete" Evacuation
13   Limited Non-Local War
12   Controlled Local War
11   Spectacular Show of Force
10   Super-Ready Status
 9   Limited Evacuation
 8   Intense Crisis
 7   Limited Military Confrontations
 6   Acts of Violence
 5   Modest Mobilization
 4   Show of Force
 3   Political, Diplomatic, and Economic Gestures
 2   "Crisis"
 1   Subcrisis Disagreement
```

SOURCE: Kahn (1962:185)

Fig. 1—Kahn's 16-step escalation ladder

> But in most of this book, I have committed the besetting sin of most
> U.S. analysts and have attributed to the Soviets a kind of military
> behavior that may in fact be appropriate only to U.S. analysts—and
> not at all relevant to Soviet conditions and attitudes.

Except for this disclaimer, however, Kahn and most of his readers went
on to use the ladders without worrying about Western-Soviet asym-
metries. This was unfortunate because, although the Kahn ladders are
in one sense objective, their use has a tendency insidiously to pro-
pagate the Western concept without discussion. For example, the
ladders: (1) deemphasize the military conflict in Europe itself, treating
it as a mere crisis or trigger; (2) encourage an image of incremental
up-and-down movement that can stop at any rung; and (3) encourage a
focus on the level of war and thresholds rather than the security
threat, balance of power, or accomplishment of objectives. Thus, the
ladders have a distinct relationship to the bargaining or signaling
approach to escalation. This slant is alien (albeit not unknown) to
Soviet thinking and is usually not obvious to Westerners approaching
Kahn's ladders for the first time (Lambeth, 1983, and Warner, 1977).

There are other problems in using Kahn's ladders for the purposes
of our current work: (1) They describe conflict in only the one dimen-
sion of violence level, thereby obscuring the global view and distinc-
tions among theaters; (2) in some respects they are exceptionally fine-

Aftermaths

	44	Spasm or insensate war
	43	Some other kinds of controlled general war
Civilian Central	42	Civilian devastation attack
Wars	41	Augmented disarming attack
	40	Countervalue salvo
	39	Slow-motion countercity war

(City Targeting Threshold)

	38	Unmodified counterforce attack
	37	Counterforce-with-avoidance attack
Military Central	36	Constrained disarming attack
Wars	35	Constrained force-reduction salvo
	34	Slow-motion counterforce war
	33	Slow-motion counter-"property" war
	32	Formal declaration of "general" war

(Central War Threshold)

	31	Reciprocal reprisals
	30	Complete evacuation (approximately 95 percent)
Exemplary Central	29	Exemplary attacks on population
Attacks	28	Exemplary attacks against property
	27	Exemplary attack on military
	26	Demonstration attack on zone of interior

(Central Sanctuary Threshold)

	25	Evacuation (approximately 70 percent)
	24	Unusual provocative and significant countermeasures
Bizarre Crises	23	Local nuclear war – military
	22	Declaration of limited nuclear war
	21	Local nuclear war—exemplary

(No Nuclear Use Threshold)

	20	"Peaceful" worldwide embargo or blockade
	19	"Justifiable" counterforce attack
	18	Spectacular show or demonstration of force
	17	Limited evacuation (approximately 20 percent)
	16	Nuclear "ultimatums"
Intense Crises	15	Barely nuclear war
	14	Declaration of limited conventional war
	13	Large compound escalation
	12	Large conventional war (or actions)
	11	Super-ready status
	10	Provocative breaking off of diplomatic relations

(Nuclear War Is Unthinkable Threshold)

	9	Dramatic military confrontations
	8	Harassing acts of violence
Traditional Crises	7	"Legal" harassment—retortions
	6	Significant mobilization
	5	Show of force
	4	Hardening of positions—confrontation of wills

(Don't Rock the Boat Threshold)

Subcrisis	3	Solemn and formal declarations
Maneuvering	2	Political, economic, and diplomatic gestures
	1	Ostensible crisis

Disagreement—Cold War

SOURCE Kahn (1965 39)

Fig. 2—Kahn's 44-step escalation ladder for generalized
or abstract scenario

grained but in other respects they fail to make *operationally* significant distinctions, such as the difference between what the Soviets call operational-tactical and operational-strategic uses of weapons; (3) they fail to distinguish between levels reached for the first time and levels reached in a deescalation;[2] (4) they force the user to rank-order the levels when sometimes it would be more appropriate to give a more neutral description of the conflict *state*; and, finally, (5) they give no sense of the war's *tempo* and tend to suggest a one-rung-at-a-time image of incremental escalation that could be altogether wrong.

It follows, then, that in spite of their long-standing interest and value in other contexts, the original Kahn ladders are inappropriate to use as the basis for RSAC rule structure: They are too inflexible, too one-dimensional, and too insidiously Western. Nonetheless, the approach described in the following paragraphs owes a great deal to Kahn's work. Moreover, as shown in Sec. VI, we shall eventually return to something like escalation ladders for methodological purposes.

A GENERALIZED TREATMENT OF CONFLICT STATE

Considerations To Be Reflected

In this subsection we present a *first* version of a generalized method for characterizing *conflict state*. We then note additional distinctions in state that should be considered in rule-writing. In Sec. VI we present a more complex conflict-state description useful in current RSAC studies.

The principal considerations governing our attempt to describe conflict state are these:

- The framework should be consistent with the RSAC's strategic-level view.
- The framework should distinguish clearly among the most important and least ambiguous states of conflict, taking into account both level of violence and the war's *scope*.
- It should avoid fine-grained distinctions, especially distinctions that are far more Western than Soviet, or vice versa.

---

[2]To give an example, it seems likely that national behaviors during a conventional war in Europe would be different if there had or had not been a previous intercontinental nuclear phase. Kahn, not surprisingly, was aware of the theoretical problem

A First-Order Framework

With this background, then, let us define the initial framework by example. We must use this approach because there is no generally appropriate way to carve the world into theaters or to decide what the most relevant distinctions are in levels of conflict: The best taxonomy depends on the context and perspective. Figure 3 assumes a context in which it is useful to consider the following "theaters": Southwest Asia; Europe; the non-Southwest Asian global naval theater; space; and the intercontinental theater. Obviously, in other cases we might want instead to highlight events in Korea, the Western Pacific, or the

Conflict Level	SWA	Naval	Europe	Space	Intercont
General Strategic Nuclear					
Counterforce Strategic Nuclear					
Demonstrative Strategic Nuclear					
General Tactical Nuclear	X	X	X		
Demonstrative Tactical Nuclear					
Biological					
Chemical	X				
General Conventional	X	X	X	X	
Demonstrative Conventional					
Regional (one superpower)					
Crisis					

Fig. 3—Illustrative representation of conflict state

Soviet-Chinese border. Figure 3 also adopts a relatively coarse spectrum for describing levels of conflict. By no means should the reader assume that we intend to ignore finer distinctions. Instead, bear with us while we approach the issue of distinctions in increasingly more sophisticated fashion.

The rationale for the breakdown in Fig. 3 has its roots in a class of problems in which war begins in Southwest Asia, may or may not spread to Europe, and may or may not spread to general war.

In any case, Fig. 3 shows how to characterize the top-level conflict state succinctly, *given a particular context guiding the choice of theaters and levels on which to focus*. It is filled out with Xs for the illustrative case in which there are: tactical nuclear war in Southwest Asia, Europe and the naval theater; chemical warfare in Southwest Asia; and conventional conflict in space. Note that we show explicitly the continuation of conventional war and, in Southwest Asia, chemical war — were there no Xs in those boxes, it would mean that *only* tactical nuclear weapons were in use. To proceed otherwise would be to encourage identifying rows with rungs of an escalation ladder — something we wish to avoid for the sake of objectivity.

Figure 4 is a variant of Fig. 3 that suggests a useful hierarchy of detail. In Sec. VI we present a more complex variation of Fig. 4 tuned to current RSAC studies.

Although we have not included them in Figs. 3 and 4, we believe it is important to consider levels of conflict such as a "conventional" war in Europe after a period of nuclear use that might have been limited to Europe or might have included intercontinental strikes. The decision rules for transitions out of such states would not be the same as for an ordinary conventional war. Such states are included in the discussion in Sec. VI. Again let us stress that *these descriptions are tailored to a particular class of studies and a particular perspective*.

Most of the levels of conflict used in Figs. 3 and 4 are self-evident but there are some important definitions and conventions:

1. *Demonstrative* use is primarily for political signaling with only secondary military value. It involves small numbers of weapons (e.g., 1-60) and is not a natural part of the Soviet repertoire.[3]

It will not be trivial to write RSAC rules determining whether a given act is for demonstrative purposes or military effect. Nor *should* it be, since real-world signals may be ambiguous and produce precisely the effects to be avoided. In the RSAC's computer operations, the procedure will probably be as follows: (1) Each force-employment option

---

[3]We would argue, however, that the Soviets might resort to "demonstrative use" in coercing weaker third countries into abandoning Western ties in wartime

Conflict Level	SWA				Naval				Europe				Space				Intercont			
	C	B	CB	—	C	B	CB	—	C	B	CB	—	C	B	CB	—	C	B	CB	—
General Strategic Nuclear																				
Counterforce Strategic Nuclear																				
Demonstrative Strategic Nuclear																				
General Tactical Nuclear	X							X				X								
Demonstrative Tactical Nuclear																				
General Conventional	X							X				X				X				
Demonstrative Conventional																				
One Superpower Conventional																				

NOTES C = chemical weapons, B = biological weapons, CB = chemical and biological weapons, and — = neither type.

Fig. 4—Illustrative representation of conflict state: variation

will be labeled by the user's intention; (2) the recipient will perceive the level to be demonstrative or not depending on whether *his* thresholds are reached and on the state of his C^3I; and (3) there may be communications from the user to the recipient indicating his intentions. This, of course, opens the door to possible deception.

Continuing,

2. *Tactical nuclear* use means here what the Soviets refer to as *operational-tactical nuclear* use (a longer expression we shall adopt in most of the text). In Europe this would include not only battle field nuclear use but also strikes by missiles and aircraft some hundreds of kilometers deep against targets such as airfields (but not cities or strategic seaports).[4] The purpose is to directly affect the short-term results on the front-line battlefield or ocean area. The tactical-strategic distinction is not based on the type of delivery vehicle (i.e., nuclear artillery versus ICBM) since, in principle, either side might use its "strategic" forces tactically.[5]

3. A *one-superpower* conflict is something like a Soviet invasion of Iran or a Soviet blockade of Berlin before any Western reaction.

4. We do not distinguish between strategic and intercontinental *levels* of conflict, but we do distinguish between strategic nuclear conflict confined to Europe and strategic nuclear conflict extending into the intercontinental theater (i.e., "theater-strategic warfare" would be denoted by an X in the top line of Fig. 4 under the Europe column).

5. As mentioned earlier, the naval theater is defined to be the high seas not directly associated with the Southwest Asian conflict. This might be defined to mean elsewhere than the Northern Indian Ocean and Arabian Sea, or elsewhere than those regions plus the Mediterranean Sea. Again, the definition should depend on the context.

[4]In Soviet parlance, when referring to ground forces, "tactical" refers to actions by divisions and smaller units, whereas "operational" refers to actions by larger units such as Soviet fronts or U.S. corps and armies (Douglass, 1980:73). Operational-tactical operations should not include destruction of seaports in major cities or attacks on other targets relevant more to the opponent's sustainability than his short-term battlefield activities.

[5]Obviously, however, tactical use of strategic weapons could be misconstrued or could cross one of the recipient's thresholds. Moreover, tactical nuclear use hundreds of kilometers into the rear could easily be regarded as strategic by the recipient. These ambiguities are real and should be reflected in RSAC war games. We suspect that the effort to write sensible rules will tend to confirm the Soviet view that signaling and intrawar bargaining are extremely delicate and dubious propositions.

We should ask whether the Soviets see similar theoretical states or levels of war. Although not necessarily authoritative, a recent article by General Larionov (1982) is useful because it catalogs the *stages* of war in non-U.S. terms ascribed to the United States: selective strikes against Eastern Europe, "a local war restricted to the battlefield, a strike against launch sites for medium-range missiles; and, finally, strategic 'limited war.'" This, like many quotations from the Soviet literature, *proves* only that the Soviets recognize the same possibilities we do—if only because they read our literature very carefully.

The astute reader may have noticed that some boxes of Fig. 4 make no sense: biological warfare in space or strategic nuclear warfare in Southwest Asia, for example. He may also be troubled by our aggregated concepts such as the "naval theater" (isn't the Western Pacific fundamentally different from the Atlantic theater?). Again let us emphasize that the figures demonstrate a methodology that can be adapted to different problems and perspectives.

The value of a framework such as that in Figs. 3 or 4 is twofold: (1) It is an easy way to summarize complex information simply in the course of an RSAC war game; and (2) it provides an ordering device for rule-writing, one that has a built-in mechanism for assuring—in a limited sense at least—the completeness of one's rules (i.e., one must write rules for all the situations and transitions suggested by the framework). We shall exploit the second feature later in the report when defining a step-by-step methodology for rule-writing. First, however, we must note some of the complications we have swept under the rug. Then we must review Soviet and Western views of escalation in some depth.

Future Improvements in the Level-of-Conflict Framework

As noted earlier, the framework provided by Figs. 3 and 4 is illustrative only, overlooking many distinctions that could be quite important in particular cases. The problem, however, is that there are *many* such distinctions and a framework incorporating all of them formally would create an enormous state space, something inconvenient to work with when writing decision rules or organizing them in models once completed. Thus, the details of the framework (choice of theaters and levels of conflict) should be tailored to applications (e.g., see Sec. VI).

With this in mind, let us continue temporarily to use Figs. 3 and 4 as indicating first-order variables. Next, let us consider a more generic list of *possible key variables*.

Variables Affecting Conflict State

Conflict locations	Delivery means	History
Conflict participants	Damage mechanisms	Quality of C[1]
Target types	Types of weapon	Own and enemy
Status of forces,	Magnitude of attack	alliances
progress, etc	Attacker intentions	Projections

After considering the many possibilities, we have concluded that the most important variables in addition to those in Figs. 3 and 4 are those summarized in Fig. 5. In Sec. VI we include some of them in the first-order framework.

Having discussed a method for describing states of conflict and making additional distinctions within such states, let us now turn to a more detailed examination of U.S., Soviet, and Western European views of escalation.

14

- Strategic or tactical warning of opponent escalation
- The apparent nature of the opponent
- Success or projected success in meeting objectives (with some objectives being more important than others)
- Costs and projected costs
- The sanctity of the homelands (for both conventional and nuclear conflicts)[a]
- The size of any counterforce attacks on the homeland
- The nature of events in "other" theaters (e.g., Sino-Soviet conflict or Soviet coercive use of nuclear weapons against Japan)
- The opponent's use or nonuse of systems thought of as "strategic" (or nonstrategic) purposes
- The sanctity of strategic forces (e.g., defensive antisubmarine warfare (ASW) along sea lines of communication versus aggressive ASW against missile-carrying nuclear submarines)
- The nature of any attacks on space assets (the nature of the functions disrupted and the manner of attack: reconnaissance versus warning satellites, jamming versus physical destruction; conventional versus nuclear weapons for the attack; etc.)
- History (e.g., origins of conflict and differences between a level of conflict reached for the first time and the same level of conflict reached after a deescalation)
- The size of naval attacks (e.g., attacks against individual vessels versus carrier battle groups)
- Other items deleted from the first-order framework

[a]Conventional attacks on a homeland could occur in connection with wars in SWA or Europe. The strategic use of conventional weapons will increasingly be feasible (Builder, 1983)

Fig. 5—A menu of additional important conflict state issues

III. ASYMMETRIC APPROACHES TO ESCALATION

DIFFERENCES IN DOCTRINE

There is little doubt that Soviet military thinkers *approach* the issue of escalation from a fundamentally different direction than do most of their Western counterparts. The roots of this asymmetry run deep and involve issues of culture, geography, and historical experience. The asymmetry can best be appreciated by recalling the deeper asymmetry in view about deterrence and strategic doctrine more generally.

It is difficult to find short, unambiguous, comprehensive, and authoritative Soviet statements about their strategic doctrine,[1] but there are constant themes that can be extracted from the totality of their writing and corroborated by viewing their force structure and practices. Appendix B provides an extensive sampling from the primary Soviet literature, but it seems more appropriate in the text to rely upon summary conclusions from Soviet specialists. In one such summary, Rand colleague Benjamin Lambeth (1981a) notes five constant Soviet themes: (1) *The best deterrent is an effective warfighting capability*; (2) *victory is possible* (or at least to be pursued vigorously, even if the "winner" will suffer horrible losses); (3) *it pays to strike first*; (4) *restraint is foolhardy*; and (5) *numbers matter.*[2]

Taken together, these themes suggest a doctrine that could not, for example, support a view of escalation with such timid halfway measures as demonstrative use of nuclear weapons. In the doctrinal Soviet view, such measures would sacrifice the initiative, invite disaster, and fail to avoid the inevitable escalation in any event.

Read alone, the themes may seem straightforward even to Western readers. However, they are almost opposites of the themes that have dominated Western political and military thinking in most of the nuclear era. Although official U.S. thinking has evolved substantially in recent years toward something more like a warfighting point of view, Western European thinking and NATO doctrine have not yet shifted. *It seems fair to characterize NATO's doctrine as follows*: (1) Ultimately, *the best deterrent of large-scale Soviet aggression against Western*

---

[1]See footnote 2 in Sec. I for a definition of "doctrine."

[2]See also Ermarth (1978) and Douglass (1980).

15

Europe or the United States is the threat of a massive strategic nuclear attack (with the flexible-response options dealing with lower-level threats, improving credibility, and providing opportunities to reestablish the ultimate deterrent should conflict begin);[3] (2) *the concepts of military campaigns and victory are meaningless in general nuclear war;*[4] (3) *even preparing the capability for an offensive campaign (even counteroffensives) would be destabilizing* and is therefore to be avoided;[5] (4) *restraint in time of a NATO-Pact war would be essential* (i.e., escalate incrementally if at all) because the alternative to restraint should deterrence begin to fail would be the assurance of total war;[6] and (5) numbers are far less important in the nuclear era than they once were—so long as assured retaliation is indeed assured and we are able to preclude an *easy* Soviet conventional victory.[7]

Our characterization may seem overstated to some, especially to those who confuse NATO's flexible-response strategy with a strategy for warfighting, or to those who confuse the predilections of American strategists with the realities of NATO planning. Nonetheless, it seems accurate to us. Section IV may help clarify the issues.

---

[3]Although the Soviets emphasize their capability for a massive intercontinental response to imperialist aggression, they effectively characterize such a strike as the decisive element of a continuing combined-arms campaign that includes occupation of Western Europe. Theirs is not a concept of a single-shot missile war.

[4]NATO forces are prepared to use nuclear weapons in a NATO-Pact encounter, but there is very little emphasis on doing so as part of a protracted *campaign* with traditional military goals such as occupation of the enemy's country. Critics of NATO doctrine state simply that "Western thinking ends with the failure of nuclear deterrence."

[5]Small-scale offensive *tactics* are not controversial but it is no accident that NATO's plans, force structure, exercises, and rhetoric emphasize a defensive strategy that seeks nothing more than restoration of the status quo ante. The Soviets acknowledge the defensive nature of the official NATO doctrine but often express concerns about the war-winning ambitions of U.S. strategic nuclear planners. They also sometimes express concern about the alleged plans of the FRG to conduct an offensive campaign into Warsaw Pact territory (Sokolovskiy, 1968:72). We note, however, that the Soviets do not appear to exaggerate NATO's capabilities or to worry unduly about a NATO conventional offensive. Western apologists for the Soviets sometimes do and, to be sure, Soviet writers have interpreted the Army's new doctrinal concepts (Air-Land Battle) as threatening—especially in propaganda writings.

[6]For an excellent account of NATO doctrine as characterized by a Western European, see Legge (1983). NATO's doctrine on this matter is profoundly influenced by the Europeans' recognition that Western Europe, the prospective battlefield, is extremely small when measured on the scale of strategic nuclear destruction. This was unequivocally so in earlier times when nuclear weapons were large and inaccurate; the issue is more complex in today's world but the Europeans have not changed their view.

[7]For an articulate discussion of this subject by a German, see Stratmann (1983). More generally, U.S. and European discussions of conventional defense options seldom go beyond stressing the need for an improved *initial* defense—something that could be achieved with relatively modest increases in force structure or, perhaps, with high-technology weapons.

CAVEATS, COMPLICATIONS, AND COUNTERCAVEATS

Caveats and Complications

Let us accept, then, that Soviet and Western military thinkers (especially Western Europeans) *approach* the issue of escalation from fundamentally different directions even though the results have something in common. This by no means implies that either side fails to recognize all the issues. To the contrary, it is evident that both sides read and understand the arguments of the other.[8] Indeed, as discussed by Warner (1977) and by Baylis and Segal (1981), there has been a long debate within the Soviet Union about nuclear doctrine and strategy, and one can find quotations from prominent Soviets asserting either side of the standard issues. And, although there have been no authoritative statements since the 1960s that would undercut the description of *Soviet military doctrine* we have described above, there *has* been a widespread tendency to soften statements about the inevitability of war becoming general and to candidly acknowledge the horrors of nuclear war. This has been remarked upon by Leites (1982).[9]

Another problem with uncritical acceptance of the doctrinal asymmetries is that both sides recognize that actions in war must be governed by the circumstances then prevalent, which may or may not correspond to those stressed in doctrine. For example, Kozlov (1971:116) states:

> During the war, military doctrine withdraws somewhat into the background because in armed conflict ... are guided primarily by military-political and military-strategic considerations and by the conclusions and generalizations which follow from the conditions of a specific situation. Consequently, war and armed conflict are guided not by doctrine, but by strategy.

This does not mean that the Soviets believe that one adopts ad hoc procedures: Instead, they say that strategy rather than doctrine determines actions within a given war. However, strategy must consider war aims, risks, values, and the whole myriad of high-policy issues.

---

[8] There is something bizarre about reading a U.S. translator's explanation of what a Soviet Marshal is saying in a book that spends dozens of pages explaining what U.S. military thinkers are writing about the implications of Soviet strategic forces. See, for example, the editor's preface to Chapter II of Sokolovskiy (1968), and Appendix B.

[9] See also the recent discussion by McConnell (1983), although we note that McConnell reads far more into Soviet writings than we believe can be justified objectively. The problem is that Soviet writers analyze U.S. strategic options in great detail without discussing their own. The temptation is great to assume that they are merely using the U.S. material as a cover while actually writing about their own views. However, this hypothesis is difficult to sustain when the Soviet writers in question are describing accurately U.S. discussions (which they are generally very careful to do), especially when the writers are in institutions charged with doing precisely that.

In this context, the following Soviet statement is interesting (Byely et al., 1972):

> Politics determines the *priority* and strength of the blows ... and the general strategic plan ... which is directed at the quickest possible rout ... or at a drawn-out struggle and the gradual exhaustion of the enemy's forces. At the same time politics ... must determine the speed and the intensity. ... In doing so politics takes into account not only the aims of the war but also those of the postwar settlement and subordinates the conduct of the war to the attainment of these aims.

As Rand colleague Russell Shaver has observed, Soviet doctrinal writings are heavily influenced by what might be called a military leader's ideal war, a war with the clear purpose of destroying the enemy and with few if any political constraints or second thoughts. Soviet workers realize that this ideal war would be tempered by exigencies of the situation, with the actual war thus representing a dialectical synthesis of the ideal thesis and the battlefield antithesis. We should also remember that the primary purpose of military training exercises, and an important function of published doctrine, is education. Hence, we should expect stress in each on driving home troublesome points, rather than on practicing or describing actual war plans. Further, since the sensitive aspects of war plans are not necessarily the most troublesome, and there is reason to conceal such aspects in any case (Leites, 1982:378–399), we should expect the Soviets to replace certain goals and operations in both exercises and doctrine with substitutes suitable for education. Finally, we at least need to acknowledge that some of these substitutes may have been chosen with the U.S. intelligence community in mind. Full discussion of this possibility is beyond the scope of this report, however.[10]

Countercaveats

Finally, some countercaveats for those who argue that Soviet political leaders see things much more like Westerners do and that the Soviet military literature is misleading. First, it seems that Soviet political and military leaderships share remarkably similar world-views

---

[10]It is said that at one point during the large-scale "Dnieper" exercises in 1967, then-Colonel General Nikolai Ogarkov organized a successful deception designed to convince foreign visitors of Soviet prowess in rapid bridging techniques. As a reward for his performance, Ogarkov was promoted to Army General and made head of the newly formed Chief Directorate of Strategic Camouflage. Ultimately, ". . . training exercises undertaken by the army, air force, or navy could only take place after the approval of Ogarkov" acting in this capacity (Suvorov, 1981:91). Although this story may be apocryphal, it nonetheless suggests caution in interpreting at least some types of Soviet exercise data, especially in light of Ogarkov's subsequent positions.

(Simes, 1981/1982). Indeed, most top Soviet political leaders worked as political officers in the armed forces during their formative years. While this does not imply that the Soviet political leadership would listen uncritically to the military's recommendations (Khrushchev, at least, was highly critical), it does suggest that the military's view of central conflict merits serious attention, especially since it is deeply ingrained in the Soviet psyche that war follows certain objective laws that can only be ignored at one's peril.[11] This concept is rooted in Marxist-Leninist thought and should therefore not be brushed aside lightly by U.S. analysts—especially since plans, forces, and exercises are based largely on doctrine and determine to a significant extent the options that would be available at the outset of actual war. Although the marvels of technology allow complex processes such as rapid retargeting of ICBMs and worldwide communications, we should not forget the experience of political leaders at the outset of World War I: Once the move toward war began, it could not in practice be modulated.[12]

[11]The reader interested in Soviet views of nuclear warfare should also see Trulock and Goure (1984), which includes a relatively extensive discussion of recent Soviet writings.

[12]Indeed, at least some authors would agree that advanced warning and intelligence fusion technologies *increase* the likelihood that alerting and war could not be controlled. See Bracken (1983:5–74).

IV. U.S. AND SOVIET PLANNING SCENARIOS

THE ROLE OF SCENARIOS

Having discussed *structural* issues (states and levels of conflict) in Sec. II and general Western-Soviet asymmetries in Sec. III, we shall now draw upon a number of explicit and implicit Soviet and Western scenarios to explore th. *dynamic* aspects of war as they apparently are understood by the two sides. By doing so we hope better to understand: (1) likely actions and events; (2) interconnections among actions and events in different theaters or functional areas; and (3) possible reasoning processes during conflict.

SOVIET PLANNING SCENARIOS

The Soviet Concept of Victory

The characteristics of scenarios explicit or implicit in Soviet writing and training are strongly affected by the fact that Soviet military thought takes seriously the concept of victory in nuclear war. This by no means implies a failure to recognize the catastrophic consequences of general war. Rather, it reflects the view that, come what may, it is the responsibility of the Soviet government and military to assure the nation's survival. More generally, and based on good sources, the Soviet criteria for victory (at least in the "ideal war" mentioned earlier) involve:[1]

- Total defeat of the enemy's military forces;
- Survival of sufficient leadership and control structure to maintain internal security and order, gain access to external resources, and assure that the Soviet Union would continue to operate as a superpower under the leadership of the Communist Party;
- Survival of resources adequate for postwar economic recovery.

---

[1]Some of these items, notably the importance to the Soviets of maintaining control, were seldom discussed publicly in the United States before the CY 1981 Defense Report. The other items can be inferred from Soviet writings such as those in Appendix B.

To achieve this victory in the context of general nuclear war will obviously be an extraordinary challenge, and the Soviets are under no illusions on this matter. Their extreme focus on achieving and main-taining the initiative, on acting decisively, and on employing a comprehensive combined-arms approach is all consistent with the view that victory is essential but extremely difficult to achieve in the modern era.

Phases of War and a Standard Scenario

As noted earlier, the Soviets tend not to focus on escalation levels per se but have long distinguished among what may be termed the *phases of war*. This permits a convenient doctrinal compromise because they can continue to assert that a superpower conflict is likely to escalate to the final general nuclear war but hedge against the possi-bility of lower-level wars by planning and exercising for lower-level phases. There are distinct advantages to such an approach even if escalation is certain, advantages involving surprise, preparation, and timing (Douglass, 1980:79; and Douglass and Hoeber, 1981:47).

Figure 6 describes what might be termed a "Standard Soviet Scenario," as inferred from their doctrinal writings and training. Not-able features include: (1) initial NATO conventional aggression fol-lowed by attempted NATO first use of nuclear weapons; (2) no inde-cisive or partway Soviet actions; (3) simplicity (no fine-tuned escala-tion control); and (4) a follow-up phase. The Standard Scenario corresponds closely to what Shaver refers to as Soviet doctrine's image of an ideal war--a war fought without the complications of political-military constraints or halfway measures.[2] As indicated in Fig. 7, the Soviets apparently focus on countermilitary targeting (but in a sense that may include critical industry and key leadership in cities), com-mand and control, follow-up operations, a somewhat protracted war, and continuation to overall victory. Especially notable is that Soviet planning scenarios suggest a *campaign* rather than a set of isolated missile exchanges.

A number of activities are not included in Figs. 6 and 7 that should probably be added to the assumed Soviet repertoire in view of their emerging capabilities. In particular, *we would expect the Soviets to show increasing interest in*:

- a longer conventional phase (interest already visible);

---

[2]Douglass (1980) gives greater emphasis to scenarios with no conventional phase or only a minimal one, and in which massive Soviet first use achieves surprise.

- *Preparation Phase*
  - Full generation of all forces and C^2 assets by both sides
  - Forward deployment of conventional forces

- *Conventional Phase*
  - Outbreak of war in Europe
    - NATO military incursion into Warsaw Pact
    - U.S.-Soviet conventional war at sea; ASW vs SSBNs prominent
  - Extensive use of strategic aviation in conventional roles (e.g., against nuclear targets)
  - Prompt failure of NATO incursion; NATO threatened with defeat reasonably soon

- *Transition to Nuclear War*
  - NATO decision to escalate to nuclear warfare
    - Possible small-scale NATO nuclear use
    - Massive NATO battlefield and theater nuclear strike planned
    - Goal is to reverse an unfavorable military situation
  - NATO nuclear decision detected by Soviets
  - Soviet nuclear preemption, both in the theater and intercontinentally (not necessarily simultaneously)
    - Additional NATO escalation deemed inevitable; victory demands seizing the initiative
    - Countermilitary targeting (broadly construed)
    - One major ICBM/SLBM strike
  - U.S. launch of intercontinental and theater strikes as rapidly as possible
    - Countermilitary targeting

- *Follow-on Phase*
  - Evaluation of exchange outcome, and continuance of war as necessary

Fig. 6—A standard Soviet Scenario

- Nuclear war starts from a major nonnuclear conflict. usually U S NATO initiated

- Strategic nuclear war (theaterwide and intercontinental) escalates from a battlefield nuclear war with U S NATO again the initiator

- Soviets preempt if possible. attempt to launch under attack otherwise

- War is countermilitary in orientation but with attacks on critical industry and political centers. including most nuclear nations

- Time-urgent targets in CONUS include nuclear weapon systems. their support facilities and U S command and control and communications collateral damage not a restraint

- Additional targets include projection forces. overseas bases. and U S allies

- Defense of homeland occurs through defense in depth. defense reconstruction. deception and mobility   wartime tactics population dispersal. critical worker shelters. and hasty industrial hardening

- Command. control. and communications continuity is achieved through mobility. proliferation. redundancy and hardening

- Nuclear phase lasts until the enemy's forces are destroyed

- Theater conflict continues until victory

Fig. 7—Characteristics of plausible Soviet scenarios
inferred from doctrinal writings

- a more complex nuclear phase with follow-on intercontinental use of strategic aviation, naval reserve forces, and ICBM reloads;
- attempts to obtain reconnaissance data from satellites, agents with satellite communications, and perhaps aircraft; and
- antisatellite warfare and launch of additional satellites.

On the other hand, the Soviets might be expected to show less concern for preemption and launch under attack because of the increased survivability of their strategic rocket forces. This possible trend might be offset somewhat by air-launched cruise missile deployments, and eventually by MX and Trident II deployments, but such large-scale deployments are some years ahead. Moreover, the Soviets will likely deploy mobile ICBMs and take other survivability measures.

The Nuclear Threshold and Evolving Doctrine

For some years many Westerners, including the authors, have expected Soviet doctrine to shift toward increased emphasis on conventional war, in accordance with their increasing capability to fight conventionally and to deter NATO use of nuclear weapons. Until recently, there has been little basis for believing that such a shift had occurred: Although Soviet doctrinal statements have for some time "not precluded" war remaining conventional, the observable emphasis was still on a war that would become a nuclear war (via variants of the Standard Scenario given above). Recently, however, several developments seem to us to signal that long-awaited shift. First, at the level of declaratory policy and doctrine, we have statements such as the following by Defense Minister Ustinov (made in the context of following up on Brezhnev's No-First-Use speech of June 1982):

> This means that now, in the preparation of the armed forces, even more attention will be devoted to the tasks of preventing the development of a military conflict into a nuclear one; and those tasks, in all their diversity, are becoming an unalterable part of our military activities.
>
> Ustinov (1982)

Taken in isolation, such a speech could be regarded as propaganda and disinformation. However, as Petersen and Hines (1983:21) describe in an excellent Defense Intelligence Agency report, the Soviets have been studying and planning for a strategic conventional offensive quite different from the offensives of past years. In 1981 they conducted the largest joint exercise in a decade, ZAPAD-81, *without*

simulation of nuclear war. This was described in the Soviet press as a hallmark event. Thus, although the Soviet campaign undoubtedly emphasized preparation for the nuclear phase (it would be anathema for Soviet military planners to *assume* the absence of nuclear escalation and thereby leave their forces vulnerable), the Soviets now appear to be more confident of their ability to fight and win a conventional war that might well not escalate (not because the Soviets have escalation dominance, but because *neither* side has such dominance).

Not all observers agree with this assessment. In particular, Douglass (1980) and Douglass and Hoeber (1981) argued that they saw no evidence as of 1980 in military writings or force structure to indicate a shift of emphasis away from the nuclear campaign, nor of any Soviet desire to keep the war conventional *should it occur* (our emphasis added, to make the point that Douglass and Hoeber presumably believe that the big decision for the Soviets is going to war in the first place; they do not mean to suggest a Soviet desire for nuclear war per se). The Douglass-Hoeber argument is supported by Soviet writings, including some of recent vintage, emphasizing the importance of surprise employment of nuclear weapons during a campaign.[3] We do not know whether ZAPAD-81 has changed the views of Douglass and Hoeber.

It is easy to define circumstances where virtually all experts on Soviet thinking would expect the Soviets to hold the war to the conventional level. However, in our view, the Douglass-Hoeber argument cannot easily be dismissed in the more difficult cases. Suppose, for example, that the Soviet Union began a strategic offensive into Western Europe hoping (but not expecting) that their superiority in theater nuclear weapons would deter not only NATO first use but also such "provocative" NATO acts as preparations for nuclear war (dispersal of weapons and launchers, etc.).[4] Such a hope would not obviously be unrealistic and, if realized, would clearly be to the Soviet advantage given their conventional strength. Suppose, however, that when the invasion began, NATO went ahead to take prudent military measures indistinguishable from preparations to use nuclear weapons. Under these circumstances, the long-standing Soviet fear of being struck first might lead to massive "preemption." On the other hand, it might

---

[3] For example, General of the Army Gerasimov's 1979 comments quoted in Scott and Scott (1982:277) and Appendix B.

[4] It would not be surprising if the Soviets encouraged the Western press and academic writers to agonize about such matters over the next few years. That would couple nicely with their no-first-use offensive. The feasibility of encouraging timidity is amply demonstrated by history, including the behavior of Stalin before the Great Patriotic War. See especially the excellent book on surprise attack by R. Betts (1982)

not—especially if the Soviets had reason to believe the key Western leaders would not use nuclear weapons or that they would follow the NATO political predisposition to attempt first a "demonstrative" use to indicate resolve. In this case, the Soviets might delay "preemption" until and unless NATO actually employed a significant number of nuclear weapons or issued messages to do so. Thus, Soviet assessment of their opponent's *will and intentions* would be critical, as would their assessment of the *political* correlation of forces (involving cohesion of the NATO alliance).

Although the uncertainties here will not soon be resolved, it is at least clear that both Soviet doctrine and practice recognize a significant threshold between conventional and nuclear warfare. The issue is how significant that threshold is and how strong the evidence of enemy intentions must be before crossing it.

A Threshold After Operational Tactical Nuclear Warfare?

If indeed the Soviets are moving toward increased emphasis on conventional war coupled with nuclear deterrence, the same logic propelling them in that direction would suggest that they also recognize a threshold at the level of tactical or operational tactical nuclear weapons. Figure 8 describes our understanding of what this might mean.

The Soviets know that NATO planning calls for highly constrained use of tactical nuclear weapons as a demonstration of ultimate resolve. And, they know that both their own scenarios and most of the Western scenarios anticipate collapse of NATO defenses, with or without use of tactical nuclear weapons, within a relatively brief period. Moreover, unlike the West, the Soviets have studied operational maneuver in the presence of nuclear weapons in great detail (at least, to the extent permitted without experience as a guide!). They have reason to believe they could win at the operational-tactical level, at least, so long as the West follows the approach of demonstrative use and halfway measures, allowing the Soviets to maintain the initiative and avoid a massive Western first strike.

There is considerable additional evidence of a threshold after the operational-tactical level. For one thing, the Soviet literature abounds with references to combat with tactical nuclear weapons (usually, to be sure, in the context of discussions about Western plans). Also, there are occasional straightforward acknowledgments that the real scenario may indeed play out in accordance with Western concepts. For example, General Zemskov (1969) commented in an article discussing the relationship between strikes of strategic nuclear forces, strategic opera-

Employment Category

	Tactical	Operational-Tactical	Operational-Strategic
Command level	Army or division	Front	Theater of operations or national
Delivery means (nominal)[a]	Artillery SSMs (Frog, SS-21) Frontal aviation	SSMs (SS-1, SS-12, SS-22, SS-23) Frontal aviation	IRBMs, ICBMs, SLBMs Strategic aviation
Target classes	Nuclear artillery SSMs	SSMs, nuclear-capable aircraft Nuclear storage	Intermediate- and long-range missiles Long- and medium-range aviation
	Divisional C^3I Troops	Air defenses Corps C^3I Operational reserves	Headquarters C^3I Strategic nodes for logistics (e.g., ports)
Depth of targets (from engagement line, km)	0-50	0-500	300-1000

NOTE For related information see Douglass (1980:73), and Petersen and Hines (1983)

[a]It is plausible that some "strategic" systems would be used for front-level, operational-tactical missions

Fig. 8—Inferred Soviet classification of theater nuclear warfare

tions in theaters of military actions, naval operations, and strategic defense, that:

> The NATO strategists are able to conduct a so-called war by stages.... In the first stage, the use of "sufficient non-nuclear forces" is specified, in the second stage tactical nuclear weapons, and in the third stage, strategic missile means. *If such a war occurs ... (its culminating point coincides with the moment of transfer to the mass use of strategic nuclear weapons).* [Emphasis added.]

Petersen and Hines (1983:4) appear to view the situation similarly, although their comments are slightly ambiguous:

> If nuclear weapons were deemed necessary by the Soviets for the success of a strategic offensive operation, they would concentrate on targeting NATO nuclear delivery systems, storage areas, and airfields.

Given the context of their comments, we assume that Petersen and Hines are referring to operational-tactical use of weapons in this

way—i.e., targeting that would include Pershings, Lances, nuclear artillery, and airfields within a few hundred kilometers of the front, but not necessarily targeting with SS-20s against GLCMs in Italy, the United Kingdom, Benelux nations, etc. This would be consistent with their excluding such obviously "strategic" targets as rear-area ports and rear-area cities with command installations and war-supporting industry. Interestingly, Petersen and Hines also observe that it is not even inconceivable that the Soviets would forgo responding in kind under certain circumstances (presumably in which there are good prospects of a quick victory should further escalation not get out of hand).

Once again, there are disagreements among analysts on these matters. Douglass (1976:5) acknowledges a possible threshold at the level of "theater nuclear weapons" but also points out (Douglass and Hoeber, 1981:61) significant passages in the Soviet literature speaking of a phase with strikes against "deep targets" (which Douglass and Hoeber argue could mean counterforce operational-strategic strikes against long-range nuclear systems and C^3) *rather than* battlefield targets. Thus, "limited theater nuclear warfare" to the Soviets might not mean the same to us and them. Such a phase might be temporary, while the Soviets find the ideal time for a massive theaterwide strike that could immediately be exploited by combined-arms operations of the sort they have discussed widely (e.g., follow-up movements with airborne and fast-moving armored columns through "holes" created by the nuclear strikes).

Other commonly held views can be paraphrased as follows:

> The initial Pact strike would be massive and would be coordinated on a theater-wide basis against NATO delivery systems and related command, control, and communications (C^3) and troop concentrations. The strike would occur if the Warsaw Pact perceived that NATO were preparing to use nuclear weapons, if NATO appeared to be losing the nonnuclear battle and were preparing to conduct a nuclear strike to prevent defeat, if the Pact attack were going poorly, or if NATO had already used nuclear weapons even on a small scale.

While peacetime Soviet military planners might well think about massive escalation if merely the rate of FLOT advance were less than that desired, we think it is quite unlikely that the escalation decisions in a real conflict would be so easily made. Moreover, as Leites (1982) points out, the Soviet admonition to "calculate, calculate, calculate" should prove that they are wiser *not* to escalate so precipitously—unless, as noted earlier, it seems that the conflict is the decisive ideal war of doctrinal writings.

In summary, we believe there is ample evidence that the Soviets recognize a potential threshold above the operational-tactical level of nuclear

use, and that in general it would not be surprising for them to leave the burden for further escalation on NATO—albeit, importantly, with preemption when necessary to avert disaster. The remaining question is how they measure the "necessity" of preemption.[5] In the past, the Soviets have seemed confident they would receive and be able to act upon strategic warning. In the absence of clear warning, however, they might reach conclusions on the basis of assumed NATO intentions or the simple fear of being struck first. Dispersal of nuclear weapons or even the imminent collapse of NATO defenses coupled with the absence of a NATO surrender could conceivably be justification for "preemption."[6]

A Threshold Before the Theater-Strategic Level?

Some of the foregoing was based on evidence from both the Soviet literature and exercise patterns. By contrast, any effort to infer a threshold between a European strategic nuclear war and an intercontinental nuclear war must be based largely on speculation and logic. The Soviets vociferously reject in their writings any suggestion that nuclear war could be confined to the European theater, although claiming, in syntaxes treating *both* homelands as sanctuaries, that the United States seeks such a decoupling (Trofimenko, 1976). This is precisely what we would expect, of course, given that it is in their interest to deter the United States from believing there could be a strategic nuclear war (in Europe, including European Russia) that left the United States untouched. Nonetheless:

- The arguments about leaving the burden of escalation on NATO and the United States remain valid at this objective level, whether or not the Soviets choose to discuss it publicly— especially if the theater-strategic conflict involved relatively modest attacks on the Soviet Union if any at all.

---

[5]Another troublesome issue is whether the Soviets would employ chemical weapons during a period of tactical or operational-tactical nuclear conflict. Although they might not do so close to the front because of the uncertainties thereby created, they also have the capability to deliver them with missiles on airfields and other targets in the operational rear See Douglass (1980). *Overall, the Soviets appear to regard chemical weapons largely as a tactical option rather than as something escalatory in the same sense as nuclear weapons.*

[6]Taken to its extreme, this argument has a sobering corollary: War will become nuclear if NATO is winning conventionally (because the Soviets will allegedly not tolerate failure) and the war will become nuclear if NATO is losing conventionally but continuing to fight (because the Soviets will allegedly see this as evidence of an impending NATO first use). Although we do not agree with the conclusion, it deserves to be taken very seriously. The uncertainties here suggest that decision rules should be subjectively probabilistic.

- Soviet intercontinental forces are now substantially more sur-
  vivable than in past years, thereby reducing the risks in
  attempting to limit a strategic war largely or in part to the
  European theater.

In summary, there is considerable evidence to suggest that *the
Soviets can imagine a nuclear war limited to Europe (at least if their
homeland were spared)*. Indeed, they would consider it a special type of
"local war." However, *it is likely that any such separation would be at
the operational-tactical level of counterforce*. There is nothing in written
Soviet doctrine to suggest a significant threshold between European
and intercontinental levels. However, *a modest threshold—i.e., one to
be entertained only in special circumstances—would not be inconsistent
with the rest of their thinking and would appear to make sense*—in the
context of war rather than in the context of peacetime deterrence.[7]
Again, however, Soviet emphasis on surprise, preemption, and main-
taining the initiative suggests that the conditions under which they
would honor any such threshold would be narrow.[8] If they concluded
that war was likely to escalate in any case (the baseline assumption of
their military writings and the vast preponderance of their practices as
we know them), they would surely preempt at a time and in a manner
of their own choosing.

Soviet Factors in Escalation

Although the Standard Soviet Scenario of Fig. 6 is too stereotyped
for our purposes, Soviet doctrinal writings do treat at some length fac-
tors that would prompt or restrain Soviet escalation, either in the
Standard Scenario or in a nonstandard contingency. It is clear that
there are *two primary factors that would prompt nuclear escalation*:

- The serious prospect for military defeat in the theater unless
  nuclear weapons are employed;
- An unambiguous signal that the opponent has decided to
  escalate the conflict and is preparing a nuclear strike at some
  level.

---

[7]McConnell (1983:22) claims to detect in the Soviet literature stronger evidence about
Soviet willingness to fight a European nuclear war. In particular he cites comments by
Sidelnikov (1980:3). Upon checking the original statement, however, we conclude that
Sidelnikov's meaning was quite different.

[8]In particular, were they to launch a *strategic* strike against Europe laying waste to
European cities it seems most unlikely to us that they would fail to attack the United
States as well.

In addition to these primary factors, one can be confident that certain secondary factors would play a part in any Soviet nuclear escalation decision. These are summarized in Fig. 9.

The entries in Fig. 9 reflect the enormous uncertainties about the nature of general nuclear war: The Soviets cannot be certain whether their forces (or NATO's) will continue to fight effectively, or whether they will come apart at the seams in the horrific contest contemplated. Nor are they certain of their allies. It is important to observe that in addition to the questions of a technical nature (how effective would a first strike be, how much can damage be limited, and so forth), many Soviet strategic concerns involve issues that are fundamental but qualitative (would NATO be more or less cohesive if . . . . etc.). The Soviets may denigrate the bargaining approach to escalation, but they do not fail to see the importance of political and morale factors.

U.S. AND NATO PLANNING SCENARIOS

Background

Because of its assumed familiarity to the reader, we do not discuss U.S. strategic nuclear thinking in this work. Nor do we say much about NATO doctrine and planning, in part because of their relative familiarity, and in part because there is not nearly so much to discuss as one might like. Because of the West's emphasis on "deterrence" in the postwar era, the West's military literature is predictably less rich than the Soviet's regarding operational employment of nuclear weapons. There are no Western analogs to Savkin (1972), Sidorenko (1970), or Sokolovskiy (1968).

At the political level, there is considerably more to read. Legge (1983) provides an excellent review of NATO's nuclear planning over the last 30 years and provides direct insight into the thinking of knowledgeable Western Europeans. Legge describes the development of flexible response doctrine and the many years of debate that have sought to interpret that doctrine pragmatically. He summarizes the strategy, as reflected in the famous MC 14/3, as follows:

> The strategy set out in MC 14/3 seeks to deter aggression by the maintenance of conventional, theater nuclear and strategic nuclear forces that would enable the Alliance to respond to any attack at an appropriate level. The initial response would be direct defense, seeking to defeat the aggression on the level at which the enemy has chosen to fight. If the aggression cannot be contained, the Alliance would be prepared to conduct a deliberate escalation, raising but where possible controlling the scope and intensity of combat, with

32

For Preemptive Escalation.

- How certain is it that the opponent is about to escalate?
- How certain is the characterization of the opponent's likely level of escalation?

For All Escalations.

- To what extent can counterforce targeting prevent the opponent's counterattack?
- How effective would launch under attack plans be if the counterattack cannot be prevented?
- How effective will active and passive defenses be?
- Will Soviet escalation in one theater cause deterrence to break down at some level in another?
- How well will Soviet and non-Soviet Warsaw Pact troops perform following the Soviet escalation and enemy response?
- How well will Soviet and non-Soviet Warsaw Pact troop control systems perform on a technical level following the Soviet escalation and enemy response?
- How will the Soviet escalation affect U.S.-NATO solidarity and cooperation?
- How will the Soviet escalation affect French support for NATO?

Fig. 9—Secondary inputs to Soviet escalation decisions

the aim of making the cost and risk disproportionate to the aggressor's objectives and the threat of nuclear response more imminent. The ultimate objective, if deterrence failed, would be to convince the aggressor of the unacceptable degree of risk involved, thus causing him to cease his attack and withdraw. Finally, in the event of a major nuclear attack, NATO would maintain a capability for a massive strategic nuclear response.

Although written in the generalities of policy, MC 14/3 and the subsequent studies led unequivocally to certain agreements. Paraphrasing from Legge (1983), these include:

- NATO regards the initial use of nuclear weapons to be fundamentally a political act, and one that should be sharply limited; the objective is to reestablish deterrence after the conventional deterrent has failed.
- A NATO-generated follow-on use would also be fundamentally political (i.e., in this context, related mostly to signaling), although it would be made in a more preemptory manner and should have significant shock value militarily.
- Significant battlefield use of nuclear weapons should go hand in glove with extension of the geographical area into the Warsaw Pact.

Although Legge discusses the many shortcomings of flexible-response doctrine, he concludes that there is little choice given the realities of Western Europe's limited conventional capabilities and the awesome destructiveness to Europe that would attend, in the Europeans' view, any general use of nuclear weapons there.

Ultimately, it seems apt to characterize NATO's current theater nuclear doctrine, however indistinct and uncertain, as providing the political leaders with *choices*. Although laudable, this translates also into the absence of well-defined and well-rehearsed plans for combined-arms actions in which the nuclear weapons would play prominently.

Western Planning Scenarios

The first point to be made about Western planning scenarios is that they bear a strong relationship to the West's theoretical literature regarding deterrence and escalation. Although there is a military literature that parallels the Soviet literature to some extent—discussing, for example, such principles of war as the concentration of force—higher-level planning and the corresponding military exercises are in close accord with the West's policy-level emphasis on

"deterrence." Thus, Western planning scenarios and higher-level military doctrine have been unequivocally defensive, not merely in the sense of assuming that the Warsaw Pact is the aggressor, but also in the operational sense: *NATO forces do not plan, train, or exercise for strategic offensives deep into the Warsaw Pact; nor have U.S. strategic nuclear forces planned, trained, and exercised extensively over a period of years for a strategic nuclear campaign in which the United States is to survive and prevail.* There has been increased emphasis on enduring strategic capability in the last few years, but little (beyond studies) begins to compare with the ambitiousness of Soviet efforts.[9] Some of this may change over the next few years as the impact of recent decisions such as PD-59 and NSDD-13 is felt. For now, however, the asymmetries in planning are immense and Fig. 10 summarizes some of them.

In government-supported institutions such as Rand and IDA, a wide variety of complex scenarios has been studied that would be unacceptable to our Western European allies if made official. These have sampled virtually all the rungs of the Kahn escalation ladders at one time or another. There have also been war games in which distinct thresholds appeared to exist at levels such as demonstrative use, counterforce use, and theater-strategic use with and without strikes on the Soviet Union. However, the existence of such scenarios in U.S. studies says little about actual U.S. doctrine. To the extent that doctrine exists, U.S. doctrine for a war centered on Europe is consistent with NATO doctrine. In the event of a real-world conflict, on the other hand, many prominent individuals including Henry Kissinger believe it is highly uncertain that the United States would follow NATO doctrine with its automatic linkage between theater and intercontinental nuclear forces.

The European allies have long been aware of this issue, of course, and have consistently insisted that actual war plans intermingle theater-strategic and intercontinental forces to the maximum extent possible. They have also emphasized this point while arguing that modernization of NATO's longer-range systems with Pershing II and GLCM need not (and indeed should not) attempt to match Soviet deployment levels in the theater. To do so would be to establish a separate theater balance and, perhaps, increase the likelihood of a war restricted to Europe, thereby lessening deterrence of war there.

---

[9]Aside from the deeply ingrained concept of "deterrence" being based on the threat of massive retaliation against military and economic targets (and the continuum of escalatory options supposedly provided by flexible response), an additional obstacle in domestic planning is the unequivocal noninterest in (and even revulsion for) intrusive civil defense measures, without which other measures have limited value.

- U S and NATO military doctrine on TNF has had little content beyond emphasizing the virtues of flexibility for political leaders. It is not well integrated with other aspects of combined arms warfare

- Nuclear weapons are adjuncts not principal elements of the defensive planning

- U S nuclear-war scenarios in Europe are usually a mere trigger for the intercontinental exchange with little detail about events in the theater especially after general war begins. Also planning largely compartmentalizes strategic nuclear forces with "scenarios" consisting mostly of assumptions about alert states at the time of the Soviet first strike on the United States

- Typical nuclear war scenarios with theater play assume

  - A Pact invasion of Europe follows some Eastern European disturbances or a third-world crisis

  - NATO's conventional defenses begin to crumble within days causing SACEUR to request nuclear release

  - Political authorities authorize severely limited initial use of tactical nuclear weapons to encourage the Pact to cease aggression and seek negotiations

  - The Soviets respond massively worldwide bringing about general nuclear war (including execution of the SIOP and the General Strike Plan)

  Play stops after one or perhaps two massive nuclear exchanges with limited play in the theater

Fig. 10—Characteristic features of Western planning scenarios

None of this means that the United States or NATO lacks the physical capability or building block nuclear options to fight a nuclear war in the European theater. To the contrary, NATO's capabilities in this regard are substantial and its potential options even more so. However, the practical feasibility of effective warfighting with TNF depends sensitively upon such "scenario variables" as warning time, political decisions, political decision times, use of warning time for pre-hostility survivability measures, and other command-and-control issues. Moreover, effectiveness for more than static defense would depend upon a total concept of operations exploiting the use of nuclear weapons. As mentioned earlier, canonical NATO planning and training do not justify confidence in NATO's real-world nuclear warfighting capability beyond that required for incremental escalation oriented toward signaling.

V. A PROCESS MODEL OF ESCALATION

INTRODUCTION

Having reviewed Soviet and Western escalation concepts we shall now sketch out a *conceptual* model that could be applied to each of the conflict states discussed in Sec. II. We refer to the model as *conceptual* because it represents a way to approach rule-writing that may or may not be reflected in the structure of an operational computer model. This said, what follows describes how the conceptual model would work if it were taken literally and implemented. This has several advantages: It relates the escalation decision to others that must be modeled and reveals some of the important and subtle technical problems to be addressed in constructing the operational model.

Before laying out the basic features of the escalation model, it is important to step back and review some *basic issues*, notably:

- Where will the escalation model reside with respect to the larger RSAC framework of models?
- Within the escalation model, what issues should be highlighted in the very *structure* of the model's flow?

Once more, we assume in this review prior familiarity with the RSAC's automated war gaming concept (see Appendix A for a brief description).

As discussed in Davis and Winnefeld (1983) and Steeb and Gillogly (1983), the RSAC's Red and Blue Agents can be regarded as having three separate decision levels corresponding, roughly, to national command, area or functional command (e.g., Commanders-in-Chief, or CINCs), operational command, and tactical command (i.e., NCL, ACL, OCL, and TCL, respectively). The NCL selects basic strategy; the ACL and OCL put the strategy into operation; and the TCL implements it. It is possible to have separate but overlapping groups of people working on modeling strategic-level, operational-level, and tactical-level processes—i.e, to work on the NCL, ACL, OCL, and TCL issues somewhat separately. Linking the efforts together, however, is an overall conception indicated schematically in Fig. 11. As indicated there, the escalation model is to be a major component of the NCL (or top-level) decision process. We summarize essential aspects of the NCL decision process in what follows to provide a context for the escalation modeling.
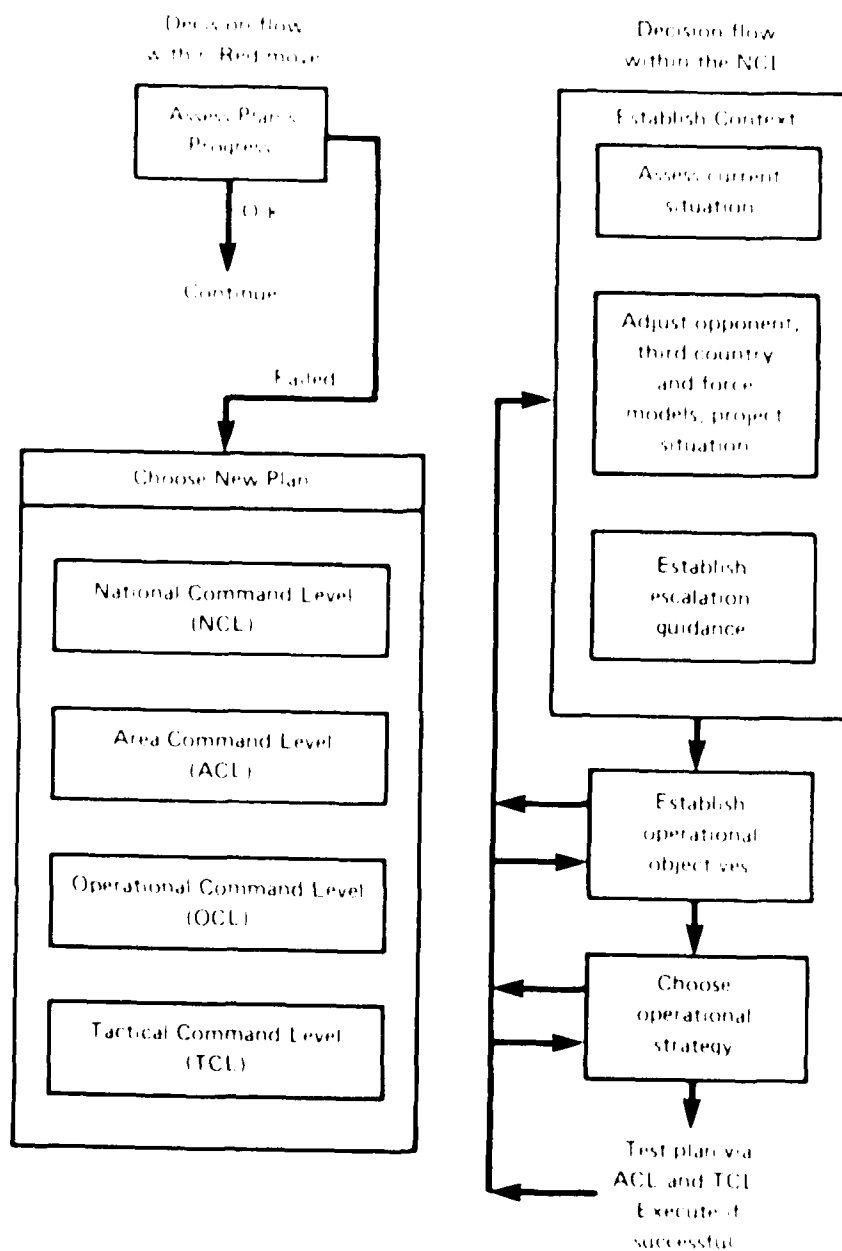
Fig. 11—A process model of Red and Blue Agent decisionmaking

The second basic question is what issues should be highlighted in the escalation model's *structure*. The answer is to some extent subjective, but we can draw on the material in the preceding sections to conclude:

- There are major asymmetries between Soviet and Western doctrinal concepts of both general war and escalation. The most basic is the Western acceptance and the Soviet rejection of the notion that escalation is a process of signaling or bargaining, rather than a process of warfighting;
- Although this asymmetry runs deep, being reflected not only in doctrinal writings but also in apparent war plans and capabilities, and deep-seated Soviet cultural proclivities, it is nonetheless a theoretical asymmetry that might well break down in actual conflict;
- It is therefore essential that the model permit Soviet behavior to exhibit aspects of bargaining and Western behavior to exhibit aspects of pure warfighting, with the behavior exhibited highly dependent upon details of context;
- The model must give adequate weight not only to nuclear escalation but also to war widening (i.e., the spreading of war into additional theaters);
- Decisions regarding escalation must include not only quantitative criteria involving matters such as FLOT advance, attrition, and ratios of nuclear capability, but also qualitative considerations involving estimates of the opponent's intentions, alliance cohesion, etc. Which considerations would dominate would depend upon context.

With this preface, then, let us first discuss the overall model in which escalation is to be embedded and then turn to the structure of the escalation model itself.

THE TOP-LEVEL DECISIONMAKING CONTEXT

The basic concepts underlying Fig. 11 are relatively straightforward and correspond, approximately, to actual decision processes. However, because we are dealing with an artificial intelligence model, there are obviously some major differences. Here, for example, we model decisionmaking as a sequential process with feedbacks. Human decisions often appear to be based on simultaneous consideration of several factors.

Starting at the top of Fig. 11, at the beginning of a Red Agent move, the agent assesses his success with the previously chosen plan.[1] In making this assessment, the agent can use any information carried in the system databases regarding the state of the world. Further, he can conduct any required "look-aheads" within the existing plan. The criteria for judging acceptability of the situation and trends are specified bounds on variables characterizing the existing plan, which are interpreted according to agent-specific rules. Examples of variables of this type are shown in Fig. 12. If no bounds have been broken, the agent continues on the existing plan. But if bounds have been broken, the agent must reconsider. This process begins with a rule set associated with the functions of the NCL. The NCL chooses a tentative and incomplete war plan to be filled out and tested by the ACL and OCL. The plan testing includes a look-ahead implemented through the TCL, which controls the interfaces with Force Agent and (together with Force Agent's submodels) determines many of the detailed decisions about orders of battle, allocation of resources, and the like—decisions that should not be highlighted in a strategic-level game. The look-ahead is a game within a game using the agent's assumptions about other players' actions and the likely results of combat. If the plan

- FLOT rate of advance
- FLOT position
- Residual deliverable EMTs
- Residual hard-target-capable weapons
- Status of support forces
- Status of sustainability capability
- Status of control structure
- Alliance cohesiveness
- Status of naval operations
- Troop morale
- Ground force attrition level
- Ground force attrition rate
- Air force attrition level
- Air force attrition rate
- Naval attrition level
- Naval attrition rate

Fig. 12—Illustrative variables
characterizing a military situation

[1]For the technical purist, the so-called Force Agent actually accomplishes this acting as the Red Agent's TCL surrogate. If the plan is succeeding, the Red Agent does not even take a turn.

passes the test, it is implemented, again through the TCL level. Otherwise, the ACL may adjust the plan and try again or report back to the NCL that some strategic-level decisions must be changed.

The second column in Fig. 11 provides more detail on what happens within the NCL. Overall, the agent begins by establishing the top-level context. If the situation or trends are unacceptable, the agent updates his model of the opponent and third parties as required by events since his last move. He then proceeds to consider new escalation guidance.[2]

Given escalation guidance, the flow model in Fig. 11 has the agent reconsider his operational political-military objectives. To some extent, decisions about objectives and escalation guidance would be reached simultaneously, hence the feedback loop. After choosing a mindset and a set of relatively specific objectives, the agent sets the broad parameters of an operational-level strategy, rank-orders plans for testing, and uses heuristic rules to select one or more candidate plans. In practice, we must rigidly define the permitted forms of objectives and strategies and then write unambiguous rules leading from game observables (combatants' locations of conflict, and status of forces, for example) to unique permitted forms. We shall not discuss such matters here, even though they are consuming a major amount of time and effort.

Ordinarily, the first plan capable of meeting objectives in a look-ahead will be implemented. Hence, there must be a well-thought-out algorithm for determining the order of plan evaluation, especially since such an algorithm will generally tend to build in some type of bias. For example, one might imagine testing plans in order of their departure from the existing plan, thus building in a bias toward incrementalism.

Finally, if none of the candidate plans tests successfully, there is a *feedback loop* that allows reexamination of earlier decisions about strategy, objectives, and escalation guidance. It follows, then, that the escalation guidance determined initially by the escalation model is not necessarily binding, as discussed below.

Thus, the top-level Major Agent model contains a feedback loop that enables revision of escalation guidance, if preceding revisions of strategy and objectives fail to achieve an acceptable situation. In performing a guidance revision, which is in fact revision of a constraint on

---

[2]We assume in Fig. 11 that the agent's "character" (i.e., the choice of Ivan or Sam) embodies a grand strategy with corresponding high-level objectives. These considerations are exogenous to the process model shown here, which deals with escalation guidance and *operational* objectives and strategy. The point is important because it would be unrealistic to have escalation guidance precede decisions on higher-level objectives and strategy. By contrast, it is not unrealistic to have a national-level decision on the constraints of warfare (e.g., weapons level and scope) precede final decisions on operational objectives and strategy.

script choice, the escalation model first needs to know that a revision is necessary. Hence, the lower levels of the top-level model need, in effect, to pass information saying that all plans consistent with the existing guidance have failed (and, to the extent possible, to indicate the generic reasons for failure—e.g., failures caused by opponent counterescalations).[3] Upon receipt of this information, the escalation model excludes the failed escalation guidance from the choice set it uses to determine revised guidance. It is in this sense that the escalation model "learns" as the move progresses.

A PROCESS MODEL OF ESCALATION

In this subsection, then, we describe a process model of escalation intended to apply to both Red and Blue Agents. It bears repeating that our emphasis is on the types of questions that need to be addressed for both agents in writing the model's associated rules. Many of these rules will be highly agent-specific; in the next subsection we shall describe the sorts of rules necessary for modeling specifically Soviet aspects of escalation decisionmaking.
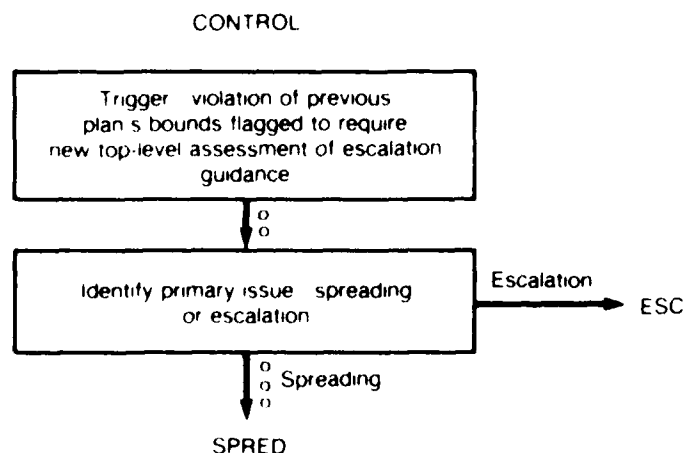
CONTROL

Fig. 13—The escalation-spreading control structure

The proposed model is shown in Figs. 13 19, and a summary of the model's structure is shown in Fig. 20. The reader should go through the flow charts carefully at this stage because we shall not repeat their content here; instead, we shall merely touch upon certain key points.

It should be readily apparent from Fig. 20 that the model attempts to be responsive to the requirements stated at the beginning of the section. Note that:

- It is generalized to treat both geographical spreading and escalation;
- The structure is "objective," allowing, in principle, for Soviet behavior involving bargaining and U.S. behavior involving warfighting, but also allowing easily the asymmetric behavior that represents a best estimate of what would happen if conflict followed a course comparable to that anticipated;
- The structure distinguishes explicitly between judgmental and quantitative assessments, using the former to drive the latter.

The first decision shown in Fig. 13 should usually be easy to make as a function of the current world state. The issue is not whether spreading or escalation is more important but rather which should be addressed first in sequential decisionmaking. Indeed, the model explicitly allows for spreading as a complement or a substitute for escalation, depending on whether escalation is viewed as desirable or undesirable, respectively. Suppose, for example, that escalation is initially chosen as the primary means of restoring an acceptable situation in CON-TROL (Fig. 13) and that the ESC branch (Fig. 14) is entered. If, subsequently, escalation proves to be unacceptable for any of a variety of reasons, the option exists for the agent to spread the conflict instead, and he would thus enter the SPREDS ("spread as substitute") branch (Fig. 15). If, on the other hand, escalation passes all tests in ESC, the agent has the option of spreading the conflict as well by entering the SPREDC ("spread as complement") branch (Fig. 16). (The latter possibility is included to enable nonincremental escalation-spreading behavior, a trait likely to be useful in modeling doctrinal Soviet decisionmaking.) Finally, these same remarks hold with respect to an initial choice of spreading to restore an acceptable plan, if ESC, SPREDS, and SPREDC are replaced by SPRED, ESCS, and ESCC (Figs. 17–19).

Moving to the next decision in ESC, some readers may quarrel that the distinction between escalating for military effect and escalating for bargaining purposes is hazy, and they would be right. Nonetheless, there are distinctions. It is assuredly true that NATO's limited nuclear options to show political resolve would also be chosen to have military
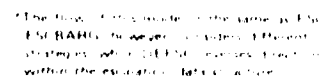
Fig. 14—The escalation flow structure

Fig. 15—Spreading as a substitute for escalation
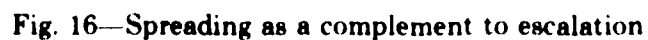
Fig. 16—Spreading as a complement to escalation

Fig. 17—The spreading control structure
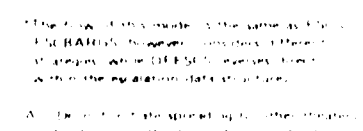
Fig. 18—Escalation as a substitute for spreading

Fig. 19—Escalation as a complement to spreading

CONTROL

Escalate — Spread

ESC

SPRED

Escalate branch (ESC):

Mode bargaining or military effect? — Bargaining → ESCBARG

Military Effect →

Direction Eescalation or Deescalation? — Deescalation → DEESC

Escalation →

Is escalation in the given theater acceptable? — No → SPREDS (EG₁ EG₂)

Yes →

Should spreading also be considered? — No → EG₃

Yes →

SPREDC (EG₄ EG₅)

Spread branch (SPRED):

Decide where to spread narrow the conflict — Narrow → NARROW

Spread →

Mode bargaining or military effect? — Bargaining → SPREDBARG

Level choose levels for spreading/narrowing

Is spreading in the given theaters acceptable? — No → ESCS SG₁, SG₂

Yes →

Should escalation also be considered? — No → SG₃

Yes →

ESCC (SG₄ SG₅)

Fig. 20—The escalation model: summary

effect—weapons would not be randomly exploded merely to show NATO's willingness to cross the nuclear barrier. The point, however, is that the first issue would probably be one of scope: "Should we cross the barrier, and if so, how large should our employment be to maximize the likelihood of *deterring* the Soviets from continuing?" Subsequent to that decision one might ask which corps sector(s) was in most trouble and therefore most in need of help from nuclear weapons, but the primary issue (and, hence, the primary rule in RSAC modeling) would be politically framed with deterrence and bargaining in mind. Were the issue merely one of maximizing the rate of advance or maximizing the likelihood of a decisive military victory within a brief period of time (something very plausible for the Soviets), then the primary rule(s) would be quite different. We shall give more examples of this later.

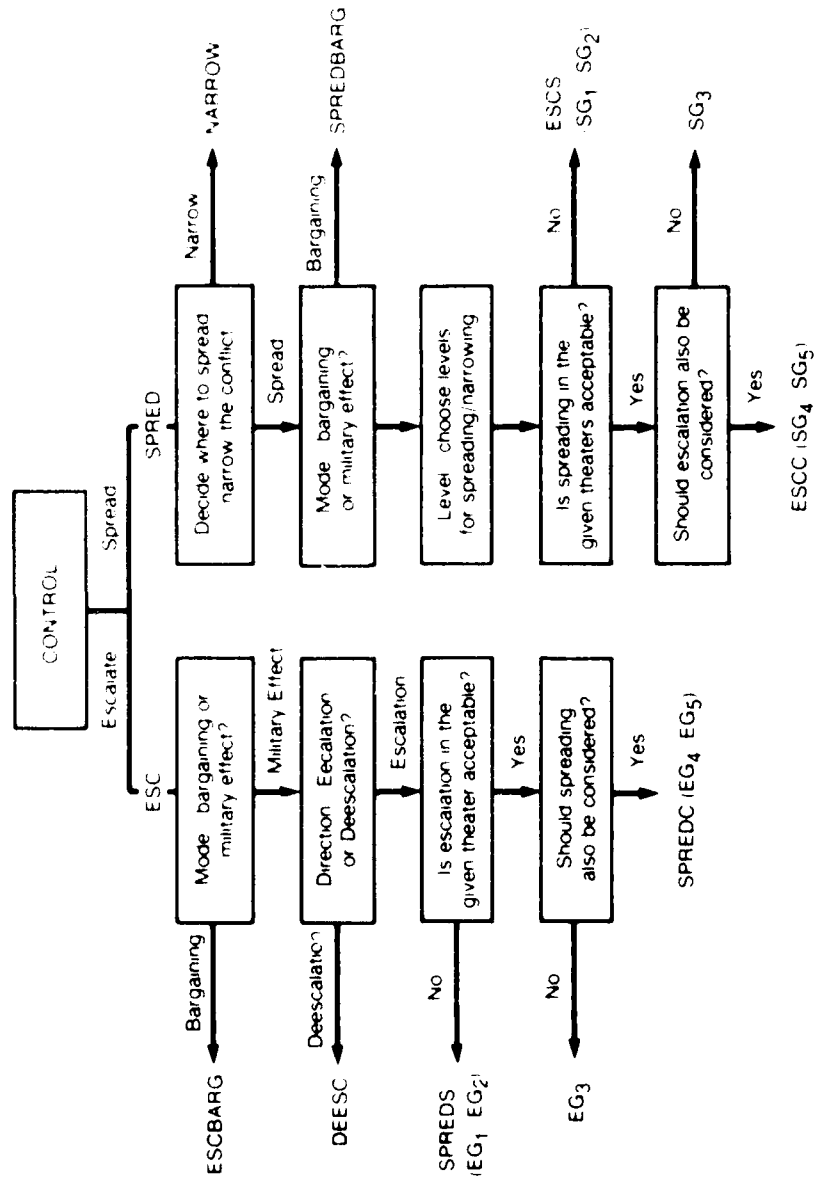The next decision is important and easy to overlook. It is not evident that the proper response at a given point is escalatory: It might instead be deescalatory; moreover, it is not evident that the proper response should involve a one-step move up (or down) the appropriate ladder. Indeed, decisions on these matters should vary substantially with different agent characters and as a function of detailed context. One agent may be an incrementalist, another a fatalistic nonincrementalist who merely wishes to assure that his nation will not be the loser in the inevitable general nuclear war.[4] The feedback loop after the "first-principles" assessment allows for nonincrementalist agents to move rather quickly to consideration of multistep escalations.

In general, if the first-principles assessment in ESC or SPRED fails, the agent has two possibilities. On the one hand, in ESC he can return to the top of the flow chart and change the mode of escalation (by entering ESCBARG, if he switches to a bargaining mode), the direction of escalation (by entering DEESC), or the number of levels involved in the escalation, as described previously. Alternatively, if the agent has searched through all of these possibilities without finding one that is acceptable, he moves to consider spreading as a substitute for escalation by moving down the SPREDS branch. Picking up this branch in Fig. 15, note that two outputs from SPREDS are possible. If some means of spreading the conflict that restores an acceptable plan can be found, escalation guidance that says to hold the level of conflict in the theater under consideration, while spreading the conflict to other theaters, is returned to the top-level structure. If, on the other hand, no such acceptable spreading can be determined, the top level receives

---

[4]See Glaser and Davis (1983) for a discussion of these and other qualitative distinctions among decisionmakers contemplating escalation under complex and difficult circumstances.

guidance directing that neither escalation nor spreading occur. In this latter case some means other than escalating or spreading must be used to restore an acceptable plan.

Returning to ESC, however, note that another feature of the initial first-principles decision point is that it assures that quantitative rules (e.g., rules involving ratios of forces or rates of advance) are subservient to higher-level considerations, precisely as they would be in the real world. Among the more prominent of these higher-level criteria are likely to be those shown in Fig. 5. By contrast with typical force models, we do not want the RSAC's Red or Blue Agents making decisions driven inappropriately by simple-minded calculations: Such calculations may well be relevant, even crucial, but *which* calculations are relevant will depend on context and the particular agent's character. Note also that an interesting inversion phenomenon is possible in the conceptual model: Although qualitative high-policy judgments may dictate a tentative decision (e.g., maintaining the initiative is critical, so consider preemption), the relevant calculation may be very sobering and may lead to a different conclusion (e.g., preemption may improve the results of conflict at the next higher level only marginally but will, of course, guarantee that conflict will reach that level, thereby guaranteeing higher casualties and potentially less contour). For this inversion of conclusions to occur, however, the agent would have to know to make the corresponding calculation (e.g., a calculation looking at his own casualties in absolute terms, rather than in terms of exchange ratios). This corresponds to choosing criteria for technical assessment, as shown in Fig. 14. Again, we anticipate substantial asymmetries in Soviet and Western rules on such matters.

Finally, as the figures indicate, decisions reached regarding escalation may have to be altered if the assessment is extended to reflect likely effects on other theaters (e.g., would the Chinese enter the war?). The result could be to anticipate spreading by preempting in that respect also; or, it could be to rule out escalation altogether. Again, the conceptual model is intended to be flexible and bias free.

AN ILLUSTRATIVE WALKTHROUGH FOR DOCTRINAL SOVIET DECISIONS

The preceding discussion has been exceptionally abstract; after all, the model in question is to be an assemblage of rules, yet we have not yet displayed a single example of a rule. Thus, it may not be evident to the reader how the model would work in practice. It is not the purpose of this report actually to construct the model—developing the

requisite rule sets will take months of additional effort. However, it is important to walk through the conceptual flow to illustrate how it would work in practice and to demonstrate that it provides a structure within which rule writers can work. With this in mind, the o's in Figs. 13 and 17 show an *illustrative* move by a particular type of Red Agent (i.e., a particular "Ivan") that tends to be somewhat risk-taking and contemptuous of the United States, but is ambivalent on the latter believing that if provoked to war, the United States and NATO would tend to become aggressive and irrational. Let us further assume that the Ivan is "very Russian" in his belief that basic Soviet military doctrine is essentially correct, although not always applicable. Finally, let us assume, reasonably, that the Ivan is strongly averse to general nuclear war; conquering the world at the expense of general nuclear war is not high on his agenda, even though he believes that any war with the West might well escalate and that the Soviet Union could prevail. Let us call this model of the Soviet Union Ivan K (K for "complex"—neither dovish nor hawkish, and neither simplemindedly doctrinal nor softheadedly optimistic about prospects for intrawar bargaining).

As the setting for our walkthrough, let us suppose: that the Soviet Union invades Southwest Asia; that the United States deploys CENTCOM forces in response; that the Soviet Union then mobilizes forces in Europe to intimidate the NATO allies and deter the United States from actually fighting in Southwest Asia; that the United States nonetheless proceeds to engage Soviet forces; and that NATO begins mobilization in Europe also. Let us further assume that for one reason or another anti-Soviet uprisings begin in portions of East Germany, although the GDR's armed forces remain loyal to the Soviet Union.[5] With this background, it is Red's move.

1. The original Soviet war plan has failed because several bounds have been violated: (a) the United States is actually fighting in SWA; and (b) NATO is mobilizing. Thus, as shown in Fig. 13, it is necessary for the Red Agent to establish a new top-

---

[5] It is well known among those with war-gaming experience that it is extraordinarily difficult to get wars started and escalated when the players are taking the exercise seriously. Historically, however, it has obviously not been impossible for wars either to start or to escalate. The reasons are highly varied but have often included misperceptions about the opponent's intentions (short-term or long-term) or capabilities. In any case, even in automated war gaming we need an initiating scenario that includes such elements. Otherwise, plausible rules will result in games ending early, unless one postulates an extreme Ivan intent on world domination even at the expense of colossal casualties and destruction.

level context for war-planning. This is so even though Soviet forces are doing adequately in SWA.

2. Upon beginning to consider changes in the top-level context, the Red Agent immediately recognizes that the real issue is whether to spread the war to Europe rather than whether to escalate the war in SWA. Thus, in Fig. 13, the flow goes downward at the first node, and we pick up the issue in Fig. 17. The rule dictating this emphasis (which is, of course, obvious to humans) might involve indicators such as: (a) the level of conflict still being conventional; (b) there being no indication of imminent U.S. escalation; and (c) NATO mobilization being under way.

3. Having focused on Europe the Red Agent must now decide on how to analyze his options: Is he going to focus on deterrence and bargaining issues or on warfighting issues? This decision is momentous and by no means obvious, even though Soviet doctrinal statements would clearly emphasize the warfighting approach. Let us suppose that in this particular exercise, however, the Soviet Union invaded SWA recognizing the significant possibility of war with the United States (e.g., a judgment that the odds of U.S. intervention were 1 in 3). The numbers in the 1-in-3 odds might have come from a simple rule translating basic but qualitative assumptions into specifics (e.g., what does it mean for Ivan K to be "somewhat" contemptuous of the United States if the United States has the capability to respond to the Soviet aggression in SWA?).

Consistent with Ivan K's character, the prior recognition that war might occur, and the evidence of threats (mobilization in Europe and the uprisings, which he might consider to be part of a Western effort to disrupt the Soviet empire), Ivan K would probably assess his options on the basis of their direct military effect. Thus, the decision flow would move downward in Fig. 17 instead of toward the SPREDBARG entry point. Note that Ivan K might well act otherwise if NATO's mobilization were nonthreatening or if he felt secure in Eastern Europe—especially if the war with the United States had come as a major surprise. In that instance, the same Ivan might consider bargaining (i.e., a cease-fire in Southwest Asia and a demobilization in Europe), especially if he had made substantial gains in SWA that he could expect to hold even in the event of a deescalation. This notion of complex Soviet behavior dependent upon details of context was suggested to

the authors by Rand colleagues Benjamin Lambeth and Arnold Horelick (see also Lambeth, 1981a:27-28).

4. Next, Ivan K decides on a level to initiate conflict in the European theater. We assume that he chooses the general conventional level. Note, however, that subsequent steps in SPRED permit upward or downward revision of this choice, as required.

5. Let us assume that Ivan K is rather contemptuous of the NATO alliance, believing that its political foundations are weak and that most of its members (as well as France) are unlikely to fight. (In modeling terms this corresponds to Ivan K assuming that those countries will be "reluctant allies" in the sense of the RSAC's Scenario Agent.) He may then conclude that the United States and FRG are likely to fight but the rest of Europe may not. This judgment about his opponents affects subsequent decisions strongly. In particular, it may cause him to base his technical assessment largely on the feasibility of a quick victory in the FRG—before most of the NATO nations or France would respond. Or, it might cause him to base his technical assessment on the feasibility of a decisive general attack, as we have assumed. The technical assessments at this point in the model might be based on simple rules using current force ratios as surrogates for calculations.

6. Let us assume that the first-order technical assessment indicates that a conventional invasion would probably be successful. The next issue for Ivan K would be to assess the likelihood of unintended escalation. Would NATO escalate to nuclear weapons in Europe or in SWA? Again, the assessment might be nothing more than a restatement about assumptions forming part of Ivan K's character (i.e., assumptions about his opponents' likely behavior patterns).

Let us assume, consistent with several previous items, that Ivan K concludes that NATO preemption is possible, but not likely. In that case Ivan K decides to proceed with a conventional invasion, although preparing for possible escalation.[6]

---

[6]Note that depending on details of Ivan K's character and the world context, Ivan K might instead conclude at this point that NATO was very likely to escalate early on. After all, he believes the United States in particular to be somewhat irrational and reckless, and he may have calculated that his invasion might not proceed fast enough to assure an extremely fast victory. (This would be a function of how long mobilization had proceeded.) If so, he might decide to initiate use of nuclear weapons as part of his initial

7. For the same reasons he used in deciding on *conventional* war in Europe, Ivan K rejects the prospect of simultaneously escalating in SWA.

8. Finally, then, the Red Agent would put the various considerations together and issue *escalation guidance* directing invasion of Europe but not authorizing use of nuclear weapons in such planning.

9. This guidance would then be passed back into the overall Red Agent decision structure (Fig. 11). The rule sets at the lower levels of the decision structure would select detailed military objectives (e.g., a quick occupation of the FRG coupled with political neutralization of the rest of Europe) and a corresponding military strategy (e.g., an invasion without waiting for additional mobilization and emphasizing daring thrusts to maximize the likelihood of the quick victory).

10. The Red Agent would then need to test his tentative strategy by selecting a corresponding plan and running a game within a game—i.e., doing a look-ahead using the full capabilities of Force Agent, Scenario Agent, and Blue Agent (as operated using Red's assumptions about forces, relevant force models, national temperaments, and Blue behavior). If the war plan appeared to work, Red Agent would then decide to implement it. If it failed, he would modify the plan or choose another one. If, for example, NATO's mobilization were so far along that a conventional invasion would not provide a high likelihood of quick victory (the criterion for high being a characteristic of Ivan K), then Ivan K would have to reconsider his escalation guidance through the feedback loop in Fig. 11. The escalation model should have rules making use of the information gained by testing an inadequate plan. Again, however, the rules would have to be Ivan-specific. As suggested in the previous footnote, Ivan K might well conclude, in this second iteration, to authorize an invasion initiated with tactical-operational nuclear weapons. If so, that guidance would again be passed back into the overall model (Fig. 11).

11. The actual results would depend sensitively upon details of context (e.g., the duration of mobilization and the survivability of U.S. and NATO nuclear weapons at that point in mobilization). But let us now suppose that the second-iteration escalation guidance also fails: In testing the script with a

invasion—consistent with the emphasis on decisiveness likely to destroy alliance cohesion. If he made such a decision, he would—at this point in the model—restrain himself to nuclear use at the operational-tactical level.

full-system look-ahead, the Red Agent discovers that certain
assumptions are violated. Perhaps first use of nuclear
weapons would not be decisive because NATO's nuclear forces
are adequately survivable and NATO's conventional forces
adequately dispersed. Perhaps the Red Agent's full-system
look-ahead indicates a high likelihood of failure (i.e., failure to
conquer the FRG) or a high likelihood of general nuclear war.
If so, Ivan K—in spite of his hard-headedness and preference
for doctrinal analysis—would conclude that the time was not
right for the great war. In this iteration back into the escala-
tion model of Fig. 17, the decision process would move into
the bargaining loop (toward SPREDBARG).

The point of this walkthrough is merely to provide some feeling for
what might happen in the course of a single move and to suggest the
types of rules that would generate different decisions. Another purpose
is to demonstrate the value of "complex Ivans" in preference to stereo-
types. The issue of complex Ivans is, however, a mixed blessing. Once
constructed, they should be relatively plausible and useful. However,
to construct them in the first place it will be necessary to anticipate a
large number of contexts in which they will be making decisions. This
problem will be discussed elsewhere in more detail.

FURTHER DISCUSSION OF RED AGENT
DECISIONMAKING

It is useful at this point to summarize a number of considerations to
be kept in mind when writing rules for Soviet decisionmaking in the
framework described above. These represent something of a *potpourri*,
but they should be helpful in a number of instances and reflect consid-
erable past research. We shall also attempt here to provide somewhat
more detail on what specific actions the Red Agent would be contem-
plating as he examined his options.

Opponent Actions

It should be emphasized that *the complex decision process anticipated
in the above model would be largely bypassed if the Soviets believed that
a U.S. or NATO first use were imminent.* Our discussion in Sec. IV
suggests that in such an instance the Red Agent would strongly con-
sider his own preemption.

As discussed briefly above, if Blue is not about to escalate at a key decision point, Red's behavior is more subtle. His tendency toward historical determinism implies that the Red Agent will view conflict-level changes as satisfactory fixes for an unacceptable situation only in special instances.[7] In particular, if Red has previously decided that historical circumstances are right for a full-scale invasion in a given theater (something that may be largely based on a perceived threat or long-term threatening trend rather than pure aggressiveness), and has carefully planned such an attack, then he would have also been reconciled to the possibility of a broader war and accepted the potential costs of such war as a fair price for theater victory (Lambeth, 1981a:27-28). Operationally, this means that Red will view escalation, including nuclear escalation, as an acceptable tool for correcting or heading off unacceptable circumstances. Conversely, if the time for a conflict in the theater is not right, and such conflict has been forced on Red as, say, a face-saving move, then we might expect the agent to attempt to extricate himself from an unacceptable situation by deescalating.

To illustrate how these latter remarks might come into play, suppose that Red confronts Blue in Europe, that the current situation is unacceptable to Red, and that there is no evidence of an imminent Blue escalation. If substantial Red deliberations preceded the conflict, as proxied by the length of time spent in mobilization, for example, then Red might attempt to regain the initiative by considering a one-level escalation. If brief Red deliberations preceded the conflict, and the projected outcome of the current script, though unacceptable, sees no change in either the boundaries or political alignment of Eastern Europe, then Red might consider deescalation. If changes in East European boundaries or political alignment would occur, then Red might continue at the current level of conflict and wait for better circumstances in which to deescalate.

Maintaining the Initiative

For a doctrinally oriented Red Agent the overriding goal is often to avoid losing the initiative as a result of the opponent's response. If, for example, Red is considering an escalation, then any projected counterescalation that exceeds the escalation's level is unacceptable, and Red would reconsider his action and probably increase the level of escalation (or at least prepare for next-step preemption). Similarly, if Red is considering a deescalation and projects that the opponent will

---

[7]But see Luttwak (1983:21-41) for a more pessimistic view of future Soviet behavior.

capitalize on the deescalation by escalating, then Red again reconsiders and probably holds constant.

Computing Projected Consequences of Potential Actions

The escalation model requires Red to calculate the effects of action and reaction on the course of the conflict. Three substeps are involved in this assessment. The first two of the substeps involve computation of target damage, followed by assessment of change in capabilities.

If considering an escalation, Red first projects the effects of such escalation on the opponent's target categories and assesses how the target damage affects the opponent's *capabilities*—it is not enough to damage targets unless they reduce enemy capabilities. In projecting the drawdown of opponent capabilities, the following assumptions would often be used:

- Red takes all available steps to degrade the opponent's tactical warning and C^3 systems as part of the escalation;
- Blue commences his counterescalation on receipt of whatever tactical warning is available; if launch on warning is infeasible, he launches under attack;

The output of this step is broken down by country in Blue's alliance and includes:

- The percentage or number of surviving and connected opponent forces:
  - General purpose forces, including mobility assets;
  - Theater nuclear forces;
  - Intercontinental nuclear forces.
- The number of Blue collateral fatalities and the percentage of collateral industrial targets destroyed (less important to Red than to Blue except in that it may affect Blue's response).
- Red then uses this information to assess the effects of escalation on the opponent's capabilities to wage war. There is considerable emphasis in Soviet thinking on the effects of escalation on the opposing alliance's solidarity, particularly when the alliance is NATO, rather than on troop performance directly. Hence, the effect of Red's escalation may best be modeled through the Scenario Agent.

After computing the effects of his escalation on Blue, Red goes through an analogous procedure that determines the effects of Blue's counterescalation on Red target categories and capabilities. In performing the target damage calculations, the following assumptions would probably be used:

- Blue has those forces computed to be remaining after the Red escalation; Red uses his model of the opponent to determine how these forces are used;
- Red launches any remaining vulnerable weapons on tactical warning, if possible, and under attack, otherwise; targets are chosen from the same target categories as Red's escalation.

Red uses this information to assess the effects of the counterescalation on his own capabilities. To take account of concerns voiced in Soviet doctrine, Red's component of the Force Model must be able to predict the effects of the counterescalation on several specific types of capability degradation, as well as on the more standard capability measures:

- The effects on Red command and control, and specifically on force connectivity. For this purpose we require models of 'heater and strategic command and control that interface with Red's component of the Force Agent and map target damage levels into connected Red weapons and forces;[8]
- The effects of a more hostile battlefield on Soviet troop morale and performance. It seems likely that this concern cannot be modeled, but rather that the Force Agent should accept norms of troop performance degradation as a parameter from Red for use in subsequent computations. Such norms might be tied to the character of the Red Agent playing in a given scenario, with the more aggressive Red projecting better performance for his troops, for example.

Geographical Expansion of the War

One important step in the primary escalation model has the Red Agent evaluate whether a spillover of the conflict into another theater (Theater 2) will occur as a result of an escalation or deescalation in the main theater (Theater 1). Red's goal in this step is to ensure that a prospective or actual Theater 2 opponent does not gain the initiative because of events in Theater 1. This does not involve an assessment of the opponent's capabilities but rather of his intentions. Thus, Red needs a model of his Theater 2 opponent analogous to the model for his opponent in Theater 1. This model should be sensitive to the factors highlighted in the description of this step in the preceding subsection.

---

[8]Initial RSAC work on the rule-based modeling of strategic command and control is discussed in Davis, Stan, and Bennett (1983).

Spillover is acceptable if the Red Agent believes that history is forc-ing a conflict between him and his Theater 2 opponent and that now is the appropriate time for such conflict. If a spillover involves poten-tially disastrous consequences for the USSR itself in its role as exem-plar of world socialism, it is unacceptable. (Note that this does not imply that Red should never become involved in potentially disastrous conflicts, but rather that such conflicts are unlikely to result from truly immutable historical forces, if they arise as a sort of afterthought to actions taken in another ongoing conflict.)

The probable order of geographical concern is as follows:

- The U.S. homeland;
- Europe with U.S. involvement assumed;
- SWA with U.S. involvement;
- The United States in locations other than CONUS, Europe, and SWA;
- The PRC;
- Other actors in other places.

For an ongoing conflict at a given level of this hierarchy, spillover into lower levels is acceptable, since no greater jeopardy to the USSR is involved, but spillover into upper levels is unacceptable. This says, for example, that it is permissible to take spillovers into third areas relatively lightly, if they contain no prospect for immediate U.S. or Chinese involvement. Once a spillover contains the prospect for such involvement, and especially if the involvement would occur in a symbol- or prestige-ridden location such as Europe, SWA, or the Sino-Soviet border, the possibility exists for derailing the evolution of social-ism through impatience and adventurism (Leites, 1951:68). Extreme circumspection is thus called for.

VI. CONCLUSIONS ON METHODOLOGY

In this final section we shall define what appears to us to be a practical step-by-step methodology for developing decision rules on escalation. The corresponding work program will probably extend over many months but should lead to reasonably robust rules i.e., to reasonably intelligent Red and Blue Agents. In our discussion we use examples tuned to current RSAC application studies, which focus on a class of potential conflicts evolving out of a Southwest Asian war.[1]

A METHODOLOGY FOR DEVELOPING ESCALATION RULES

Before getting into the methodology per se it is important to draw two lessons from the material of earlier sections:

- There is no unique way to characterize the state of conflict. However, the concept of escalation inherently involves the notion of such conflict states and transitions among them. It also involves the notion that some states represent "higher" states of war than others.
- There is no uniquely correct way to characterize the future behavior of the Soviet Union or United States with respect to escalation, even in a well-defined situation. The best we can do is to work with a range of plausible alternative behavior patterns (our so-called Ivans and Sams), for each of which there must be a complete set of decision rules, *and* when unavoidable, to have the decision rules expressed in terms of subjective probabilities.

With this preface, we recommend a rule-writing methodology as follows *for a particular expert[2] sitting down to construct such rules.*

---

[1] Note added in proof (January 1985) Working prototype decision models have been developed by this chapter's methodology and will be described in future publications by Paul K. Davis, Steven C. Bankes, and James Kahan

[2] The reference to an expert is traditional in artificial intelligence work involving rule-based models We should emphasize, however, that there are no real "experts" in this work Instead, there are analysts and other specialists who may or may not have had high level experience in the government or military, and who certainly have not had direct experience (except in war games) with decisionmaking on nuclear escalation.

1. Recognize that no set of rules can be *complete* and that the rule sets obtainable in the early years of analytic war gaming will be highly incomplete. Accept the necessity of focusing on the *class of problems* under study.

2. With such limitations in mind, identify the "key" theaters and levels of conflict to be highlighted in a formal structure. It is not necessary that the "theaters" correspond to particular command regions, or even that they consist of geographically contiguous regions. In cooperation with other RSAC analysts, define the conventions for determining the theater or conflict level. Record decisions on this matter to avoid ambiguity later.[3] Go through this issue briefly first, and then return to it later.

3. Using computer aids if available and paper and pencil as a poor substitute, construct: (a) a matrix showing conflict state without significant structural assumptions about "levels" of war (e.g., Fig. 21); (b) a list of subjectively ordered *levels* of war using the more important variables from the matrix; and (c) a transition matrix connecting elements of that list (e.g., Fig. 22). Record simplifications made in going from (a) to (c).[4]

4. Choose an Ivan or Sam for which to develop decision rules.[5]

5. Working with the transition matrix, identify the most plausible transitions for the given Ivan or Sam for each of the possible initial situations. Record, briefly, the rationale for

[3] If, for example, one identified SWA, Europe, the intercontinental and (non-SWA) naval theaters, in which would each of the following be considered to be: naval warfare in the Mediterranean, air attack on the Suez Canal, and submarine attacks on ships in the southern Atlantic en route to the Persian Gulf?

[4] The particular forms used in Figs. 21 and 22 focus on the theaters and issues we consider most important for initial RSAC applications work in 1984. Their rationale will be described in Davis and Schwabe (forthcoming). Note that the levels used in the "escalation ladder" of Fig. 22 distinguish among several terminations and are characterized by the "highest" active theater. Thus, characterizing the level of war as European general conventional is shorthand for what could be a very complex conflict state involving, for example, Southwest Asia or the high seas, as well as Europe. The shorthand concept of levels is extremely important in rule-writing because of the large number of potential states (i.e., the states possible within the framework of Fig. 21), but it must be used with caution or it will produce implicit biases.

[5] This assumes the capability to characterize the Ivan or Sam reasonably well. We currently foresee three techniques for doing so: (a) providing an unstructured prose description; (b) filling out a standardized attribute check list involving matters such as aggressiveness, flexibility, and perceptions of the opponent; and (c) using informal decision trees to sketch out "grand strategy"—identifying what the particular Ivan or Sam would see as the major decision points and major options lying ahead. All three techniques are now under study.

	SWA	Other Naval	Europe			Space	
	Chem?	SSBNs?	Chem?	USSR Home?	Tac Only?	Other Nonhome-land Theater	Inter cont (U S / SU)
	Yes No	Yes No	Yes No	Yes No	Yes No		
General Strategic Nuclear							
Counterforce Strategic Nuclear							
Demonstrative Strategic Nuclear							
Tactical Nuclear (Post Intercontinental Nuclear)							
General Tactical Nuclear							
Demonstrative Tactical Nuclear							
Conventional (Post Strategic Nuclear)							
Post Nuclear Conventional							
General Conventional							
Demonstrative Conventional							
One Superpower Conventional							

Fig. 21– A recommended state space for 1984 applications

excluding others (the rationale would depend primarily upon consistency with the assumed agent's character, or upon the inherent unreasonableness of some transitions).

6. For each initial situation, identify key variables determining transitions. Examine the conflict-state matrix (Fig. 21) and the menu of "additional variables" in Fig. 23 in selecting these key variables (which may be as few as three or four in number and will depend on the Ivan or Sam of interest).[6]

[6]We anticipate that the key variables will be relatively high-level abstractions in many cases (e.g., risk of opponent nuclear escalation). These variables must then be

Final State (Same Numbering as Initial Situation)

Initial Situation   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

1 Prepare for war

2 SWA termination

3 EUR termination

4 Termination

5 SWA one superpower conventional

6 SWA demonstrative conventional

7 SWA general conventional

8 EUR demonstrative conventional

9 EUR general conventional

10 EUR post nuclear conventional

11 EUR post intercontinental conventional

12 EUR demonstrative tactical nuclear

13 EUR general tactical nuclear

14 EUR post intercontinental tactical nuclear

15 EUR demonstrative strategic nuclear

16 EUR counterforce strategic nuclear

17 EUR strategic nuclear

18 Intercontinental counterforce strategic nuclear

19 Intercontinental strategic nuclear

Fig. 22—An illustrative transition matrix

7. Again using automated rule-writing aids if available, develop decision rules for the transitions from the initial situation. Make sure that decision rules are written to cover all the most important transitions identified in step 5. *When possible, the decision rules should be expressed as decision trees or decision tables,* since doing so helps document the original logic and simplifies review.

8. In developing the decision rules, or as a check on the rules once developed, *consider* (i.e., look over and use as needed) the

related to system observables used as proxies for the definitive information. It is here, rather than in the high-level rules themselves, that one will find quantitative calculations measuring, for example, the potential consequences of an opponent first strike.

- Strategic or tactical warning of opponent escalation
- The apparent nature of the opponent
- Success or projected success in meeting objectives (with some objectives being more important than others)
- Costs and projected costs
- The sanctity of the homelands (for both conventional and nuclear conflicts)
- The opponent's use, even if for nonstrategic purposes, of systems considered "strategic"
- The size of any counterforce attacks on the homeland)
- The nature of events in "other" theaters (e.g. Sino-Soviet conflict or Soviet coercive use of nuclear weapons against Japan)
- The sanctity of strategic forces (e.g. defensive ASW versus aggressive ASW against SSBNs)
- The nature of any attacks on space assets (the nature of the functions disrupted and the manner of attack reconnaissance versus warning satellites, jamming versus physical destruction, conventional versus nuclear weapons for the attack, etc.)
- History (e.g., origins of conflict and differences between a level of conflict reached for the first time and the same level of conflict reached after a deescalation)
- The size of naval attacks (e.g. attacks against individual vessels versus carrier battle groups)
- Other items deleted from the first-order framework of Fig. 21

Fig. 23—A menu of additional issues to be considered in rule-writing

step-by-step logic of the conceptual escalation model presented in Sec. V. Where possible and convenient, develop the escalation rules with chains of reasoning along the lines of that model." In particular, be careful to develop quantitative criteria appropriate to the mode of reasoning (focus on bargaining or warfighting, etc.).

9. Go on to the next initial situation (i.e., repeat (6)).

10. Go on to the next Ivan or Sam (i.e., repeat (4)).

11. Reexamine the results of early steps and repeat if necessary with refined assumptions.

12. Repeat the entire process more rigorously, recording rationale as carefully as possible and defining conditions appearing in rules in terms of current or feasible RSAC system observables. Add rules for transitions initially excluded as relatively less important or plausible."

13. Develop "alert the-analyst" rules to cover as many situations as possible of those for which careful rules have not been developed, thus making it possible for the automated agents to know something of their own limitations (to have *meta knowledge* in the vernacular of artificial intelligence)."

There are variations of this process that may prove useful in practice. For example, if one had computer aids to keep track of the "important" theaters and levels of conflict and to automatically construct the resulting transition matrices, it would be easy to elevate particular issues from Fig. 23 to the status of first-order variables defining the state.

We should emphasize that this procedure is not intended to be quick and efficient. It may take months to develop large numbers of sensible rules for a range of plausible Ivans and Sams. On the other hand, the methodology is intended to be far more quick and efficient than the brute-force approach of listing all the issues, defining the space of all

---

The point is not to use the model of Sec. V formally, but rather for the expert to constantly "eyeball" it, in the same way as he should "eyeball" Figs. 21 and 23 to make sure he is considering a balanced set of potential variables. It is for him to decide (at a glance, in some instances) which appear to be the most relevant for the rule in question.

Almost any transition could be plausible under some circumstances. For example, even an Ivan extremely concerned with decisiveness might, under special circumstances, do something incremental. Leaving out the rules dictating that behavior would be quite excusable initially but eventually adding them would be part of the process of making the Ivan more intelligent over time.

Note that if there is no rule of the form "If X ... then ..." then the Red or Blue Agent will simply overlook the fact of X should it arise in a war game. Thus, it is far better to insert the alert the agent rules, which is possible if one has a relatively complete state space (e.g., Fig. 21) to use in addition to a simplified representation such as the escalation ladder of the transition matrix (Fig. 22).

possible states implied by those issues, and then writing rules connecting all possible states to all other possible states one at a time. The procedure we have outlined would allow a human expert to focus quickly on the transitions and variables he deemed important for a given Ivan or Sam. The follow up to sharpen logic, define terminology, and add additional considerations would necessarily be time consuming but need not be accomplished by the original expert. Thus, the methodology is consistent with the desire to develop alternative rule sets from a range of experts who may be willing to devote some time to the challenge but are either unwilling or incapable of the longer-term rigorous work.

ALTERNATIVE IVANS AND SAMS, AND STOCHASTIC DECISION RULES

It should be evident from the discussions of Secs. III and IV that large uncertainties exist about Soviet and U.S. escalatory behaviors in a future conflict. On the other hand, the notion of a *complex Ivan* (and similarly complex Sam) condenses the problem significantly. If we work with complex Ivans and Sams, i.e., Ivans and Sams that will behave very differently depending on the circumstances, rather than with stereotypes such as the fatalistic Ivan, it should be possible to capture a substantial range of plausible behaviors in a relatively few rule sets. In particular, we see the need for three Ivans and two Sams. We shall discuss these at more length elsewhere.

Even with a well defined Ivan and a reasonably well-defined conflict state, rule writers will find that they sometimes want to express decisions in probabilistic terms because the uncertainties are so great. For obvious reasons, we want to minimize this procedure in preference to using alternative Ivans and Sams, and conducting occasional sensitivity analyses on individual rules. However, this will not always be sufficient. It is quite plausible, for example, that the ultimate decisions about escalation or deescalation could be sensitive to the weariness of a single individual, the special influence of the last advisor to speak, or some quirk in command and control. Such considerations cannot be captured adequately by characterizing the Ivan or Sam in behavioral terms or in terms of a grand strategy (see also Glaser and Davis, 1983).

We conclude that the RSAC should plan on permitting a few of the most important escalatory rules to be expressed in terms of subjective probabilities. Thus, if both Red and Blue Agents had three such key decision points with two outcomes possible at each, we would need to run 64 war games to see all the possible scenarios. Fortunately, we

anticipate that the 64 games would turn out to fall into a much smaller number of classes with relatively similar outcomes and developments. Thus, the burden created by this relatively minimal and cautious introduction of probabilistic factors (which would be necessary only in certain studies) will probably be tolerable. In the short run, however, such complications should be deferred until we gain far more experience with the overall concept.

Appendix A

BACKGROUND ON THE RAND STRATEGY ASSESSMENT CENTER AND AUTOMATED WAR GAMING

The RSAC is an ambitious multiyear effort to improve the methods by which the United States analyzes and reviews military strategy for potential large-scale conflicts. The RSAC program is the result of DoD initiatives late in the 1970s, initiatives largely influenced by the desire to embed strategic *nuclear* analysis in a richer context than that permitted by the traditional "exchange calculation" approach. As a by-product of the effort to build such a context, the RSAC will be able to treat a broad range of conflicts ranging from U.S.-Soviet confrontations in third areas to full-scale prolonged nuclear war. It will take several years to approach the RSAC's potential in this regard, but progress is now rapid.

As discussed early in the RSAC effort, the concept of having the *option* to replace the human teams of traditional war games with computer automatons holds out great promise. Indeed, it seems likely that only by such a procedure will it be possible to gain enough control over the variables of war games to permit reproducible, transparent, and rigorous *multiscenario* analysis.

Automated war gaming is an analytic approach with the same structure as classic war games but with human players complemented by or replaced to a large extent by computer models acting as automatons or "agents." Thus, we refer to the *Red, Blue,* and *Scenario Agents,* the automatons representing the Soviet Union, United States, and third countries, respectively. These automatons (or computer models, to be less pretentious but also less colorful) cannot, of course, be reliable predictors of national behavior—there are fundamental uncertainties that no amount of research can eliminate. Thus, we work with *alternative national personalities,* referring to Ivan 1 and Ivan 2, Sam 1 and Sam 2, etc.; similarly, we have rule sets for "reliable allies," "initially reluctant allies," etc. We program the various models in artificial-intelligence languages designed to maximize the transparency of the rules. It will be possible for the analyst to interrogate the system about the reason for an automaton's decision and to have the system respond by displaying the relevant rules in an English-like language. If

the analyst does not like a given rule, or has discovered a mistake, he will be able to change the rule interactively.

A powerful feature of our approach, one that tends to distinguish artificial-intelligence modeling from other forms, is the use of *heuristic rules*—i.e., individual rules that need not be part of a cosmic theory and which may not even be universally valid. It has become increasingly apparent to researchers in this area that one can often go further faster using a heuristic approach than attempting to derive that cosmic theory first.

In addition to Red, Blue, and Scenario Agents, the RSAC system includes a Force Agent that keeps book on forces worldwide and describes the expected results of conflict upon demand. The Force Agent relies upon numerous individual combat models, many of which are currently being improved. Figure A.1 illustrates how an RSAC war game proceeds and suggests by its form that Force Agent, unlike the others, does not make decisions. Rather, it is a service agent (albeit a very complex one, containing much of what is most interesting to some users). In fact, one can look at Scenario Agent similarly. Scenario Agent does not describe third-nation behavior in the same detail as that provided by Red and Blue; instead, it essentially keeps book on the scenario context and adjusts that context as the game goes on in ping-pong fashion between Red and Blue.

In addition to the human players who may be present in a particular application, RSAC war games employ human technicians and analysts who can intervene in any move in the game to correct glitches, overrule automatons, or provide unmodeled information. Preferably, however, not much intervention is necessary; instead, the analysts explore issues by rerunning a game with different inputs. The result is a new scenario with new outcomes. Note that by contrast with traditional analyses, *the scenario is an output rather than an input* in RSAC war games. This means that an analyst wishing to have the RSAC system produce a canonical scenario must spell out a lengthy set of assumptions and tune those assumptions until he gets the results desired.

There is another aspect of the RSAC system to address and that is the RSAC's emphasis on multiscenario analysis. It is not our purpose to develop a computerized system for running individual war games but rather to seek the capability to examine *large numbers of war games* to better analyze the adequacy of alternative forces and strategies. This is a fundamental departure from traditional analysis, which emphasizes "best estimate" planning factors and specifies one or a very few planning scenarios at the outset. In our approach, we want to address uncertainties in such variables as: (1) Soviet behavior, (2) U.S. behavior, (3) third-country behavior, (4) force levels, (5) strategies, (6)

Fig. A.1—Move sequence and information flow in RSAC
automated war games

details of initial setting, and (7) outcomes of certain types of key battles. How one might hope to digest and make use of the data from such multiscenario studies is a difficult issue now under study.

Finally, we should note that it is often difficult to distinguish clearly between current RSAC capabilities, reliably predicted capabilities, and optimistic visions. As this report was completed (February 1984), the automated war-gaming system had recently become a reality at the level of software. This represented a major achievement because of the system's size, complexity, and use of state-of-the-art techniques. However, there remained a great deal of additional work to complete development of credible rule sets, war plans, and force models. Moreover, the software system was by no means as reliable, interactive, or user-friendly as will be the case in the future.

Appendix B

SOVIET VIEWS ON ESCALATION[1]

This appendix supplements the text by providing a sampling of Soviet statements on escalation, doctrinal and otherwise, and some specific references to the relevant Soviet and U.S. literature. It is natural for readers to ask where they can find clear statements of the Soviet doctrine U.S. analysts describe. Unfortunately, there is no easy response: Soviet doctrine must be understood from a variety of sources that are not always consistent or equally authoritative. Moreover, Soviet doctrine is neither static nor simpleminded, in spite of Western calumnies to the contrary. We have not attempted here to conduct yet another exhaustive search of the Soviet military literature. We have, however, reviewed a number of primary sources (in translation) and secondary sources, notably:

1. The authoritative book on Soviet military strategy by Marshal Sokolovskiy (1968), which not only elaborates on Soviet thinking to a remarkable extent but also has extensive commentary on U.S. and Western European writings.

2. The *Soviet Military Thought* series, translated by the U.S. Air Force, and including in particular Sidorenko (1970) and Savkin (1972).

3. Secondary sources by Western Soviet experts providing detailed references to the Soviet literature, notably: Baylis and Segal (1981), Douglass (1980), Douglass (1976), Douglass and Hoeber (1981), Erickson and Feuchtwanger (1979), Goure et al. (1974), Scott and Scott (1982), and Warner (1977).

4. Papers about Soviet military doctrine that do not contain specific references to the literature but that do encapsulate much of what is known: Lambeth (1983), Lambeth (1981b), Warner (unpublished).

With this background of primary and secondary references, what follows is merely a sampling of interesting Soviet statements relevant to

---

[1] See also Trulock and Goure (1984).

75

the current topic. By no means is it intended to "prove" anything, since quotation gathering is a game that anyone can play.[2]

DETERRENCE

The Soviets do not talk about deterrence in the same way as Westerners. Instead, they tend to use words such as *sderzhivat* (restrain) rather than their translation of Western deterrence (*ustrasheeniye*), which connotes frightening or scaring. *Sderzhivaniye* apparently expresses the need to be able to hold the enemy at every level of political and military conflict.

1. Marshal Malinovskiy provides what appears to be a Soviet-style definition of deterrence:[3]

> We are not adherents of the well-known military aphorism: attack is the best form of defense. On principle, this does not suit the socialist states, which are peace-loving by their very nature. We propose another: the best method of defense is to warn the enemy of our strength and readiness to *smash* him at his very first attempt to commit an act of aggression. [Emphasis added.]

2. Marshal Malinovskiy (1962:15), also quoted by Sokolovskiy:

> [Soviet military power needs to be adequate] to instill doubts about the outcome of a war planned by the aggressor, *to frustrate his criminal designs in embryo, and if war becomes a reality, to defeat the aggressor decisively.* [Emphasis added.]

WARFIGHTING AND VICTORY

Soviet military leaders, unlike U.S. Secretaries of Defense, have no problem promulgating the doctrine that war is to be won, should it come. It is also clear from their statements that to them warfighting

---

[2]For good discussions of how Soviet writings vary across the spectrum, especially when one includes political statements as well as authoritative statements of doctrine, see Warner (1977) and Baylis and Segal (1981). The point here is not that the Soviets are inconsistent or illogical but rather that they fully recognize the complexity of nuclear strategy and are quite willing to acknowledge simultaneously the horrors of nuclear war, the hollowness of any "victory" to be expected, and the necessity of having forces capable of pursuing that victory vigorously.

[3]Quoted prominently in the foreword to Sokolovskiy's second edition, which is reprinted in the third (Sokolovskiy, 1968:xii).

goes far beyond the overdebated issue of counterforce vs. countervalue missile strikes and focuses instead on a total capability to crush the enemy with a combined-arms attack and to occupy major portions of Western Europe. Most U.S. and Western European military experts seldom think beyond the first large nuclear exchange.

1. Marshal Sokolovskiy (1968:282,284) in discussing the role of the strategic rocket forces during modern war:

    > They will fulfill their tasks by carrying out nuclear rocket strikes according to the plans of the Supreme High Command to attain victory over the enemy for the benefit of the entire armed conflict and for the benefit of a rapid defeat of enemy countries as a whole.

    > The frontline ground troops in conjunction with frontal aviation and with the fleet in coastal regions, using the results of strikes by the Strategic Rocket Troops, long-range aviation and rocket-carrying submarines against objectives and enemy groups in the theaters of military operations, will destroy the remaining groups of enemy troops, occupy enemy territory, and protect their own territory. . . .

    > Another type of strategic operation in modern war is the military operation in land theaters aimed at final destruction of enemy troop units, the capture and occupation of enemy territory and the prevention of an invasion of the socialist countries. This type of strategic operation, as before, will be highly significant in the attainment of the military-political aims of the modern war.

2. Marshal P. A. Rotmistrov, reinforcing the Soviet emphasis on a combined-arms image of modern war:[4]

    > Our military doctrine proceeds from the fact that victory in war, if the imperialists unleash it, will be won by efforts of all types and categories. . . .

3. Marshall Sokolovskiy again (p. 292):

    > Offensive operations in a future war will be the basic means for solving the problems of armed conflict in land theaters of military operations. They will be conducted by fronts and by combined arms, tank, and air armies. The main role in solving the combat problems of an offensive operation will be played by operational-tactical rocket

---

[4]Moscow Radio, February 7, 1968, quoted in Warner (1977).

troops and frontal aviation using nuclear ammunition and also by tank, motorized infantry, and airborne troops.

4. Marshall Ogarkov (1979):

> Soviet military strategy considers that a war comprises a complex system of interrelated, large-scale simultaneous and successive strategic operations, including operations conducted in a continental theater of military operations. The overall objective of each such operation comprises one of the specific military-political goals of the war, involved with ensuring the protection and retention of important areas of friendly territory and, when necessary, also with the defeat of a specific strategic grouping of the enemy. . . .

> [With regard to the operations in a continental theater such as Europe] Modern operations will be characterized by larger scale and will involve a fierce struggle to seize and retain the strategic initiative, by highly mobile operations of groupings of armed forces on independent axes under conditions of the absence of continuous fronts, by deep reciprocal penetrations by the warring sides, and by rapid and abrupt changes in the operational strategic situation. The objectives of all these operations, like victory in the war as a whole, can only be achieved by the combined efforts of all services and branches of the armed forces. . . .

None of this means that the Soviets fail to understand the nature of nuclear war or the potential hollowness of victory (see, for example, Warner, 1977). Indeed, even doctrinal writings make clear the level of damage possible—although often using the common Soviet technique of quoting the Western literature and referring only to the damage the West would suffer:

5. From Sokolovskiy (1968:197)

> The unavoidable enormous losses of the USA in the event of a nuclear war were also openly discussed by certain official representatives in American government circles and in particular by Secretary of Defense R. McNamara. Thus, in 1965, he officially admitted that a strike by the Soviet strategic missiles against only 200 US cities, could, in a few hours, lead to the destruction of almost 150 million people and two-thirds of the American industrial potential.

> [After going on to say that this *underestimates* Soviet potential] The losses in a world nuclear war will not only be suffered by the USA and their NATO allies, but also by the socialist countries . . . many hundreds of millions of people would perish, and most of the remaining alive, in

one respect or another. would be subject to radioactive con-
tamination.

That is why we are talking of the unacceptability of a world
nuclear war. . . .

The supreme catastrophic threat of a world nuclear rocket
war is hovering like a spectre over mankind. It can break
out suddenly as a result of an initially local military con-
flict. The alternative . . . is peaceful coexistence of states
with different social orders.

SURPRISE ATTACKS AND PREEMPTION

Although the Soviets have long claimed and probably now have
achieved the capability to absorb a U.S. first strike and then retaliate
with what they would term a crushing response, their literature is also
replete with references to the need for surprise and preemption. It
should hardly be surprising that a nation studying war as a science
should conclude that it pays to strike first, but the difference between
their thinking and Western planning since the early 1960s is nonethe-
less striking. Warner (1977) discusses the issue well and notes that the
Soviets have muted their comments about preemption somewhat,
particularly with regard to the intercontinental level, since certain pub-
lic discussion of their writings in the late 1950s.[5] Nonetheless, we find
statements such as the following throughout their literature:

1. Marshall Sokolovskiy:[6]

    Since modern weapons permit exceptionally important stra-
    tegic results to be achieved in the briefest time, the *initial
    period of the war will be of decisive significance for the out-
    come of the entire war.* Hence, the main task is to work out
    methods for reliably *repelling a surprise nuclear attack,* as
    well as methods of breaking up the opponent's plans by
    dealing him in good time a crushing blow. [Emphasis in
    original.]

2. Lt. Gen. D. I. Shuvyrin, Deputy Chief of Civil Defense
    (1968:17):

---

[5]See Dinerstein (1962), pp. 187, 189–211, and Garthoff (1958), pp. 85–87, for 1950s-
era Soviet statements, which were very candid.

[6]*Voyenna Strategiya* (1963), p. 260.

> One must keep in mind that the aggressors will not be able to make full use for their purposes of their strategic means of attack. *A portion of these means of delivery will be destroyed or damaged before their launching while they are still on their launch sites, bases, and airfields.* [Emphasis added.]

3 Sidorenko (1970:115):

> To attain the greatest effectiveness, it is recommended that the nuclear strikes be launched at the start of the fire preparation unexpectedly for the enemy. *Preemption in launching a nuclear strike is considered to be the decisive condition for the attainment of superiority* over him and the seizure and retention of the initiative. [Emphasis added.]

4. General of the Army Gerasimov, quoted in Scott and Scott (1982:277), with a lot deleted here for brevity:

> From my own experience . . . to seize the initiative . . . it is necessary to carry out a surprise attack. . . .
>
> *In conditions of full-scale use of nuclear weapons, modern tanks . . . where there are . . . increased tempos . . . and lack of solid fronts, much better opportunities have emerged for . . . surprise.*
>
> *The least delay can lead to loss of the initiative and defeat.* . . . [Emphasis added.]

Although discussion of preemption in even such disguised forms has become rare in the Soviet literature (Gottemoeller, private communication), it is unlikely that their view has changed. A portion of the Soviet view can be ascribed to the extreme vulnerability they felt during the first 20 years or so after World War II—a period during which, in spite of Soviet braggadocio, the United States had a major strategic advantage.[7] In recent years the Soviets have gained capabilities that reduce the objective importance of their striking first (and the United States has gained additional second-strike capability as well). Thus, we should not be surprised if they emphasize preemption less in the future—at least with respect to general nuclear war. However, the con-

---

[7] This is discussed in more length by Dinerstein, Goure, and Wolfe in their preface to the Rand translation of Sokolovskiy's first edition, *Soviet Military Strategy*, edited by Marshal of the Soviet Union V. D. Sokolovskii, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963.

cept of decisive action, including preemption, is deeply ingrained in their operational psyche.[8]

ON THE ISSUE OF RESTRAINT

Many Westerners believe that war between the superpowers would be likely to escalate to total war. And even such experts as Harold Brown believe that it is unlikely that nuclear war could be contained (Brown, 1983). Nonetheless, the United States and NATO have devot d a great deal of attention to escalation control, limited wars, and limited strikes. Moreover, NATO's forces are prepared primarily to fight a conventional war (of short duration) and preparations to use tactical nuclear weapons and intermediate-range nuclear forces are strongly influenced by deterrence theory and hopes for escalation control.

By contrast, the Soviets have consistently rejected the Western concepts of escalation control. Some insight about their thoughts on the matter can be gained from the following (emphasis added):

1. General Talenskiy (1966:225,227):

> History has taught the Soviet Union to depend mainly on itself in ensuring its security. . . . *The Soviet people will hardly believe that a potential aggressor will use humane methods of warfare, and will strike only at military objectives, etc. The experience of the last war, especially its aerial bombardments and in particular the combat use of the first atomic bombs, is all proof to the contrary.* That is why the Soviet Union attaches importance to making as invulnerable as possible not only its nuclear rocket deterrent but also its cities and vital centers, that is, creating a reliable defense system for the greatest number of people. . . .
>
> When the security of a state is based only on mutual deterrence with the aid of powerful nuclear rockets it is strictly dependent on the goodwill and designs of the other side, which is a highly subjective and indefinite factor.

---

[8]The Soviets seldom talk about true first strikes. By preemption they mean precisely what the word usually means: action in anticipation of the enemy's action. The question then arises as to how they would be certain the imperialists were about to escalate. If their measure of imperialist intent were the preparations of forces (what Western commanders might regard as prudent protective measures), then the distinction between an unprovoked escalation and preemption becomes academic. It is quite likely that the Soviets are in fact quite concerned about unnecessary escalation, especially now that their vulnerabilities are less than they were previously.

2. Marshal Ogarkov (1979), in a discussion of military strategy, provides additional insight and an authoritative view:

> *Soviet military strategy sees a future war, should the imperialists manage to unleash one, as a decisive clash* between two opposed world socioeconomic systems—socialism and capitalism. It is assumed that the majority of the world's states may be drawn into such a war simultaneously or successively. It will be a global struggle of unprecedented scope and fierceness involving multimillion-strong coalitions of armed forces; *it will be conducted without compromise and will pursue the most decisive political and strategic goals.* All of the military, economic, and spiritual strength of the warring states, coalitions and social systems will be fully utilized.

THE NUCLEAR THRESHOLD IN SOVIET THINKING

It follows, then, that the doctrinal Soviet view is one of all-out conflict in which the concept of "restraint" would be out of place. Nonetheless, the Soviets have considered in detail U.S. writings on limited war, and have obviously not precluded the possibility of such events. In particular, they distinguish between nuclear and conventional wars.

1. General of the Army Ivanov as early as 1969:

> There is too great a risk for destruction of one's own government and the responsibility to humanity for the fatal consequences of the nuclear war is too heavy for an aggressor to make an easy decision on the immediate employment of nuclear weapons from the very beginning of a war without having used all [nonnuclear] means of attaining his objectives.

2. Or, more recently, Ogarkov in the same authoritative encyclopedia reference mentioned above:

> It is believed that . . . a world nuclear war will be relatively short. Considering the enormous potential . . . capabilities . . . however, the possibility is not ruled out that such a war could also be a lengthy one. . . . In such a case, the Soviet Union and the fraternal socialist states will have definite advantages over the imperialist states, advantages stemming from the just objectives of the war and the advanced nature of their social and state systems. This will provide them with objective possibilities for achieving victory . . . Soviet military strategy assumes that a world
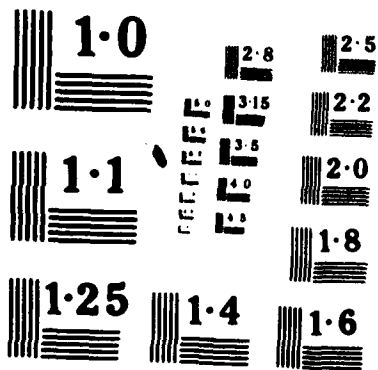
> war may be started and conducted for a certain period of
> time with conventional weapons alone. The expansion of
> military operations, however, can result in its escalation
> into a general nuclear war, with nuclear weapons, primarily
> strategic, as the main means of conducting it. Soviet mili-
> tary strategy is based on the position that the Soviet
> Union . . . will not be the first to employ such weapons. . . .

3. Or, finally, Defense Minister Ustinov (1982):

> This means that now, in the preparation of the armed
> forces, even more attention will be devoted to the tasks of
> preventing the development of a military conflict into a
> nuclear one; and those tasks, in all their diversity, are
> becoming an unalterable part of our military activities.

LIMITED NUCLEAR WAR

With respect to limitations within nuclear war, Soviet public writ-
ings reject Western concepts vociferously (however, see the text on this
matter).

1. Alexy Arbatov (1980), discussing McNamara:

> . . . such concepts as "limited strikes" which seemed
> rational to McNamara as long as nuclear war was being
> discussed in abstract, lost their attraction when it came
> time to make practical decisions.

2. Gerasimov (1980:75-76):

> The concept of a limited nuclear war, especially a lengthy
> one, is highly speculative . . . that is it presupposes that the
> other side, too, accepts the "rules of conduct" proposed to
> it. This supposition is based on the shaky argument con-
> cerning the relative determination of the sides to heighten
> the degree of risk. It is considered that the other side will
> limit the strength of its blows, since otherwise it would get
> a strike at a higher step of nuclear escalation.
>
> Deliberation of this sort introduces in the military strategy
> psychological nuances which will hardly play the decisive
> role at the moment of engagement. It is naive to hope to
> muzzle a nuclear war. But even at the level of psychologi-
> cal deliberations it is possible to show the inevitability of
> the conflict escalating. Assume that the opponents have
> exchanged strikes. What then? Victory after such an
> exchange of strikes will belong to the side which will show
> more readiness to continue.

3. Sokolovskiy (1968:68), commenting on U.S. views about limited war:

> The most candid statement of opinion by the military-political leadership of the USA on this question was the statement of the former Deputy Secretary of Defense . . . Gilpatric . . . , "As for me, I never believed in a so-called limited nuclear war. I simply do not imagine how one can establish such limitations once any sort of nuclear weapon is launched."
>
> In spite of all these theories and concepts, one can state with assurance that the strategy of limited warfare based on the use of only tactical nuclear weapons, will involve the dangers analogous to those connected with the strategy of "massive retaliation."
>
> Various limitations are mostly forced and conditional. A limited war is fraught with a tremendous danger of escalating into general war, especially if tactical nuclear weapons are used. This is also recognized by American theoreticians.

4. Major General M. Goryainov, providing us with a typical observation implying the inappropriateness of restraint and protraction:

> The result of such a course of war (protracted) would be equally disastrous for all warring sides. A decision in favor of one side depends on the readiness and ability to finish the war in the shortest period of time.

5. A. Ye. Yefremov (1972), in what Goure et al. (1974) term a major book:

> Military conflict on European territory . . . would inexorably involve all other states of the world . . . and the . . . threat to use some of the American tactical atomic weapons to carry out local actions in Europe, figuring that the use of "warning atomic shots" will not lead to escalation and a global thermonuclear war . . . (is obviously) . . . dictated by propaganda rather than military considerations.

6. Sidorenko (1970:134) on failure to act quickly enough and the dangers of being preempted, a reminder of why Soviet military leaders would dislike political fine tuning:

> A delay in the destruction of means of nuclear attack will permit the enemy to launch the nuclear strikes first and may lead to heavy losses and even to the defeat of the offensive. The "accumulation" of such targets as nuclear

weapons and waiting with the intention of destroying them
subsequently is now absolutely inadmissible.

7. Although there are also discussions in the literature indicating
    that the Soviets are sensitive to the dangers of premature
    "preemption," Lomov's admonition is still typical (Lomov,
    1973:147):

    > One of the decisive conditions for success in an operation is
    > the anticipating of the enemy in making nuclear strikes.

As an unusual but important exception to the rule, we note at least
one case in which the Soviets talk straightforwardly about the possibil-
ity of war following Western precepts:[9]

8. General Zemskov (1969) (quoted in Scott and Scott, 1982):

    > The NATO strategists are able to conduct a so-called war
    > by stages. . . . In the first stage, the use of "sufficient non-
    > nuclear forces" is specified, in the second stage tactical
    > nuclear weapons, and in the third stage, strategic missile
    > means. *If such a war occurs* . . . its culminating point coin-
    > cides with the moment of transfer to the mass use of stra-
    > tegic nuclear means. [Emphasis added.]

What the Soviets Don't Say Counts Also

Having provided numerous quotations of the standard sort, let us
now recall the sage observations of Leites (1982:377) (emphasis in ori-
ginal):

> One encounters unmitigated expressions of the classic stance I allude
> to in the title of this section. One characteristic feature, it is said, of
> a war in which strategic weapons are employed will be the unlimited
> use of nuclear weapons.
>
> Why is this rise in the nuclear level of a nuclear war, from just above
> zero (if that were the beginning) to the maximum, going to occur in
> *every* case? If one looks more closely at the pertinent texts, one dis-
> covers suggestions that this famous point expresses a desire to max-
> imize deterrence more than a forecast—not to speak of a resolve.

---

[9]The recent paper by McConnell (1983) provides better and more recent quotations
on this subject.

Mechanisms of escalation are not described; instead, there is the sheer assertion that "if nuclear powers are drawn into a war, it *will inevitably grow* into general nuclear war."

But, increasingly, "inevitability" is replaced by a probability falling short of unity. "Even if a conflict begins with a strike on a few ... military objectives," one will say, "it will ... quickly transform itself into general war, *incapable of* 'flexible regulation.'" However, by virtue of the words replaced by ellipsis dots, it will do so only "most likely." Given the fact that "nuclear war has its own *law-governed patterns*," will an analyst predict that, once "a limited exchange of strikes has begun," the war is bound to "reach unlimited proportions"? No, only that it "can" do so, with which nobody would disagree.

Leites' bottom line is: "The Soviets do not talk seriously about strategic nuclear war in public." In a section called "Taking Deterrence Seriously" (p. 379), he writes:

It is perhaps just because the Soviets are so interested in the distinction between deterrence and war-fighting that they have kept silent about it. The war not being yet begun, this is the hour of deterrence: deterrence by the prospect of a maximum initial strike, of preemption, and of the none-or-all character of nuclear war. Once the war is on, the Authorities may adopt that "controlled" conduct about which the West (in a possible Soviet estimate) is now so prematurely chattering.

BIBLIOGRAPHY

Arbatov, Alexy, *Bezopasnost' v yadernyy vek i politika Vashingtona (Security in the Nuclear Age and the Policy of Washington)*, Moscow, Politizdat, 1980.

Arnett, R., "Soviet Attitudes Towards Nuclear War: Do They Really Think They Can Win?," in J. Baylis and G. Segal (eds.), *Soviet Strategy*, Croom Helm, London, 1981.

Baylis, J., and G. Segal (eds.), *Soviet Strategy*, Croom Helm, London, 1981.

Betts, R., *Surprise Attack*, Brookings Institution, Washington, D.C., 1982.

Bracken, P., *The Command and Control of Nuclear Forces*, Yale University Press, New Haven, 1983.

Brodie, B., "On the Objectives of Arms Control," *International Security*, Summer 1976, pp. 17–36.

Brown, H., *Annual Report to Congress of the Department of Defense for Fiscal Year 1982*, 1981.

Brown, Harold, *Thinking About National Security: Defense and Foreign Policy in a Dangerous World*, Westview Press, Inc., Boulder, 1983.

Builder, Carl H., *Strategic Conflict Without Nuclear Weapons*, The Rand Corporation, R-2980-FF/RC, April 1983.

Byely, B., et al., *Marxism-Leninism on War and Army (A Soviet View)*, Moscow, 1972. (USAF translation No. 2 in the *Soviet Military Thought* series, 1984.)

Davis, P. K., and J. A. Winnefeld, *The Rand Strategy Assessment Center: An Overview and Interim Conclusions About Utility and Development Options*, The Rand Corporation, R-2945-DNA, March 1983.

Davis, Paul K., Peter J. E. Stan, and Bruce W. Bennett, *Automated War Gaming as a Technique for Exploring Strategic Command and Control Issues*, The Rand Corporation, N-2044-NA, November 1983.

Davis, P., and W. Schwabe, "Analytic Description of Military Strategies and War Plans," The Rand Corporation, forthcoming.

Dinerstein, H. S., *War and the Soviet Union*, Frederick A. Praeger, New York, 1962.

Dinerstein, Herbert S., Leon Goure, and Thomas W. Wolfe, *Soviet Military Strategy*, edited by Marshal of the Soviet Union V. D.

Sokolovskiy, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963.

Doughty, R. A., *Leavenworth Papers: The Evolution of U.S. Army Tactical Doctrine, 1946-1976*, Combat Studies Institute of the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 1979.

Douglass, J., "The Soviet Theater Nuclear Offensive," *Studies in Communist Affairs*, Vol. 1, U.S. Government Printing Office, Washington, D.C., 1976, p. 5.

Douglass, J. D., Jr., *Soviet Military Strategy in Europe*, Pergamon Press, New York, 1980.

Douglass, J., and A. Hoeber, *Conventional War and Escalation: The Soviet View*, Crane, Russak, and Co., Inc., New York, 1981.

Douglass, J. D., Jr., and A. M. Hoeber (eds.), *Selected Readings from Military Thought, 1963-1973*, U.S. Government Printing Office, Washington, D.C., 1982.

Erickson, John, and E. J. Feuchtwanger, *Soviet Military Power and Performance*, The Shoe String Press, Inc., Hamden, 1979.

Ermarth, F. W., "Contrasts in American and Soviet Strategic Thought," *International Security*, Fall 1978, pp. 138-155.

Freedman, L., *The Evolution of Nuclear Strategy*, St. Martin's Press, New York, 1981.

Garthoff, Raymond L., *Soviet Strategy in the Nuclear Age*, Fredrick A. Praeger, New York, 1958, pp. 85-87.

Gerasimov, Gennady, "Commentary on Presidential Directive No. 59," *Novosti Daily Review*, August 14, 1980; reproduced in *USSR Report, Military Affairs*, Joint Publications Research Service, JPRS 76315, August 27, 1980.

Glaser, C. L., and P. K. Davis, *Treatment of Escalation in the Rand Strategy Assessment Center*, The Rand Corporation, N-1969-DNA, April 1983.

Goure, L., F. Kohler, and M. Harvey, *The Role of Nuclear Forces in Current Soviet Strategy*, Center for Advanced International Studies, Washington, D.C., 1974.

Ivanov, General of the Army S., "Soviet Military Doctrine and Strategy," *Soviet Military Thought*, No. 5, May 1969; Foreign Broadcast Information Service, *Foreign Press Digest*, No. 0116/69, pp. 48-49.

Ivanov, S., "On the Methods of Influencing an Opponent's Decisions," 1971, in J. D. Douglass and A. M. Hoeber (eds.), *Selected Readings from Military Thought, 1963-1973*, U.S. Government Printing Office, Washington, D.C., 1982.

Jones, C., "Soviet Military Doctrine and Warsaw Pact Exercises," in D. Leebaert (ed.), *Soviet Military Thinking*, Allen & Unwin, Ltd., London, 1981.

Kahn, Herman, *Thinking About the Unthinkable*, Horizon Press, New York, 1962.

Kahn, H., *On Escalation: Metaphors and Scenarios* (rev. ed.), Penguin Books, Baltimore, 1965.

Kaufmann, William W. (ed.), *Military Policy and National Security*, Princeton University Press, Princeton, 1956.

Koslov, S. N. (ed.), *Spravochnik Ofitsera (The Officer's Handbook)*, Moscow, Voyenezdat, 1971. (USAF translation No. 13 in the *Soviet Military Thought* series, p. 116.)

Lambeth, B. S., *How To Think About Soviet Military Doctrine*, in J. Baylis and G. Segal (eds.), *Soviet Strategy*, Croom Helm, London, 1981a.

Lambeth, B. S., *Risk and Uncertainty in Soviet Deliberations About War*, The Rand Corporation, R-2687-AF, October 1981b.

Lambeth, B. S., *On Thresholds in Soviet Military Thought*, The Rand Corporation, P-6860, March 1983.

Larionov, V., "Scenarios for Limited Insanity," *Krasnaya Zvezda*, 16 July 1982, p. 3.

Leebaert, D. (ed.), *Soviet Military Thinking*, Allen & Unwin, Ltd., London, 1981.

Legge, J. M., *Theater Nuclear Weapons and the NATO Strategy of Flexible Response*, The Rand Corporation, R-2964-FF, April 1983.

Leites, N., *The Operational Code of the Politburo*, McGraw-Hill, New York, 1951.

Leites, Nathan, *Soviet Style in War*, The Rand Corporation, R-2615-NA, April 1982.

Lomov, N. (ed.), *Scientific Technical Progress and the Revolution in Military Affairs (A Soviet View)*, Moscow, 1973. (Translated by the U.S. Air Force and available through the U.S. Government Printing Office.)

Luttwak, Edward N., *The Grand Strategy of the Soviet Union*, St. Martin's Press, New York, 1983.

Malinovskiy, Marshal, "The CPSU Program and Problems of Strengthening the Armed Forces of the USSR," *Kommunist*, No. 7, May 1962, p. 15.

McConnell, James A., *The Soviet Shift in Emphasis from Nuclear to Conventional*, Center for Naval Analysis, CRC 490, Vol. II, June 1983.

Ogarkov, Marshal N. V., "Strategiya voyennaya" (Military Strategy), *Soviet Military Encyclopedia*, Voyenizdat, Moscow, Vol. 7, 1979, p. 564.

Petersen, P., and J. Hines, *The Soviet Conventional Offensive in Europe*, Defense Intelligence Agency, DDB-2622-4-83, 1983.

Savkin, V., *The Basic Principles of Operational Art and Tactics: A Soviet View*, Moscow, 1972. (Translated by the U.S. Air Force, 1975, and available through the U.S. Government Printing Office.)

Schelling, T. C., *Arms and Influence*, Yale University Press, New Haven, 1966.

Scott, H. Fast, and W. F. Scott (eds.), *The Soviet Art of War: Doctrine, Strategy, and Tactics*, Westview Press Inc., Boulder, 1982.

Shuvyrin, D. I., "A Reliable and Effective System," *Voenniye Znenua* (Military Knowledge), No. 10 , October 1968.

Sidelnikov, Major General I., "Who Needs Military Superiority and for What?" *Krasnaya Zvezda*, January 15, 1980, p. 3.

Sidorenko, A. A., *The Offensive*, Moscow, 1970. (USAF translation in the *Military Thought* series, 1976.)

Simes, D. K., "The Military and Militarism in Soviet Society," *International Security*, Winter 1981/1982, pp. 123-143.

Sokolovskiy, Marshal V. D. (ed.), *Voyennaya Strategiya* (Military Strategy), 2d ed., Voyenizdat, Moscow, 1963.

Sokolovskiy, V. D., *Soviet Military Strategy*, 3d ed., Crane, Russak, and Co., Inc., New York, 1968. (Edited and translated by H. Fast Scott, 1973.)

Steeb, R., and J. Gillogly, *Design for an Advanced Red Agent*, The Rand Corporation, R-2977-DNA, May 1983.

Steinbruner, J., "Launch Under Attack," *Scientific American*, January 1984, pp. 37-47.

Stratmann, K. Peter, "Prospective Tasks and Capabilities Required for NATO's Conventional Forces," *Strengthening Conventional Deterrence in Europe*, Report of the European Study Group, St. Martin's Press, New York, 1983.

Suvorov, V., *The Liberators*, Hamish Hamilton, London, 1981.

Svyatov, G. I., "On U.S. Policy in Developing Its Armed Forces and on Arms Limitations," *Voprosy istorii*, No. 2, 1978, pp. 72-74.

Talenskiy, N., "Anti-Missile Systems and Disarmament," in John Erickson (ed.), *The Military-Technical Revolution*, Frederick A. Praeger, New York, 1966.

Trofimenko, G. A., "The Evolution of U.S. Military-Policy Strategy After World War II," *Voprosy istorii*, No. 3, 1976.

Trulock, N., and D. Goure, *Soviet Perspectives on Limited Nuclear Warfare: Characteristics, Options, and Objectives*, Science Applications, Inc., Greenwood Village, Colorado, March 15, 1984.

Ustinov, D., "Otvesti ugrozu yadernoy voyny" (Removing the Threat of Nuclear War), *Pravda*, July 12, 1982.

Voyenna Strategiya (Military Strategy), 2d ed., Voyenizdat, Moscow, 1963, p. 260.

Warner, E., *The Military in Contemporary Soviet Politics*, Frederick A. Praeger, New York, 1977.

Warner, E., "Nuclear Operation in Soviet Military Strategy," The Rand Corporation, 1983 (unpublished).

Yefremov, A. Ye., "Europe and Nuclear Weapons," 1972, in N. Lomov (ed.), *Scientific Technical Progress and the Revolution in Military Affairs (A Soviet View)*, Moscow 1973. (Translated by the U.S. Air Force and available through the U.S. Government Printing Office.)

Zemskov, V., *Voyennaya Mysl' (Military Thought)*, No. 7, July 1969, in H. Fast Scott and W. F. Scott (eds.), *The Soviet Art of War: Doctrine, Strategy, and Tactics*, Westview Press Inc., Boulder, 1982.

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
R-3235	AD-A151253	

4. TITLE (and Subtitle)	5. TYPE OF REPORT & PERIOD COVERED
Concepts and Models of Escalation	Interim
	6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)	8. CONTRACT OR GRANT NUMBER(s)
Paul K. Davis, Peter J. E. Stan	

9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
The Rand Corporation 1700 Main Street Santa Monica, CA 90406	

11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE
	May 1984
	13. NUMBER OF PAGES
	91

14. MONITORING AGENCY NAME & ADDRESS(If different from Controlling Office)	15. SECURITY CLASS. (of this report)
	Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, If different from Report)

No Restrictions

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side If necessary and identify by block number)

20. ABSTRACT (Continue on reverse side If necessary and identify by block number)

see reverse side

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE
JAN 73

This study describes a conceptual decision model for treating escalation processes in the automated war gaming of the Rand Strategy Assessment Center (RSAC). It also summarizes much of what is known about Soviet views on escalation, and briefly reviews U.S. and Western European views. The study's purpose is to provide a logical structure for writing decision rules, a structure that would assure some level of coherence and completeness while encouraging rule writers to consider specific issues and to keep in mind asymmetries in U.S., Western European, and Soviet thinking. Section II reviews the classic Western concept of escalation ladders, notes its weaknesses for t sided war games intended to reflect Soviet-Western asymmetries, and then develops a more appropriate framework. Sections III and IV compare Western and Soviet concepts of escalation. Section V draws upon the issues of preceding sections to sketch out a conceptual escalation model. It then provides a simplified example of how the model might work in a particular scenario. Finally, Section VI describes a methodology for actually writing decision rules coherently.

Additional keywords: conflict, deterrence,