PROJECT AIR FORCE

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Managing Risk in USAF Force Planning

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Summary

DoD is currently shifting funding from future investment programs to cover urgent war needs, accepting some increase in future risk in order to reduce risk in the near term. The tension between current and future operational priorities is likely to worsen as the costs of ongoing operations in Iraq and Afghanistan, global operations against radical Islamists, and looming recapitalization needs across the armed forces constrain resources available to meet the challenges posed by nuclear-armed regional adversaries, the emergence of China as a great power, and continued unrest in the Middle East. In such a complicated and stressful environment, managing risk across possible missions and between today and tomorrow is of preeminent importance. This requires that difficult judgments and choices be made.

This monograph seeks to help Air Force leaders manage risk across multiple futures. It explains a transparent method to guide senior leaders as they make necessarily subjective judgments about the relative probabilities and potential harm associated with alternative policy options across multiple futures. In particular, it seeks to give the USAF three capabilities to which the study's sponsor gave high priority early in the analysis:

- Give decisionmakers a more visceral sense of the persistent presence of uncertainty and its implications for policy decisions.
- Filter the "parade of terribles"—the seemingly endless list of potential threats and challenges—so that decisionmakers can focus planning on the most salient threats.

- Help decisionmakers better understand and communicate to the broader Air Force, OSD, and Congress the policy-relevant *consequences* of "taking risk" when resource shortages occur.

A Framework for Integrating Risk into Force Planning

This document offers an orderly framework in which senior Air Force leaders and their planning staffs can sharpen their understanding of their subjective beliefs about the future and the policy implications of these beliefs. It seeks to improve transparency about the assumptions, implicit and explicit, that shape policy decisions. This document describes a simple scorecard for reporting the findings derived from the application of this framework. Senior Air Force leaders and their planners could use the scorecard described here to build consensus on beliefs about the future and risks associated with it and then communicate these consensus beliefs to relevant audiences inside and outside the Air Force.

The approach described here develops, maintains, and updates a basic scorecard like that shown in Table S.1. Each column contains information for a different policy package. Column 0 shows information for the currently programmed force, appropriately extended to cover any relevant planning horizon. To reflect our sponsor's interests, the analysis reported here focuses on a horizon of 10 to 15 years, but the scorecard can address any horizon. Each of the remaining columns presents information on some alternative policy package applied over the same horizon. Each row provides information about outcomes associated with these policy packages in a different future. For convenience, we define the futures used in this table in terms of the type of generic threat expected to dominate this future during the period covered by the planning horizon (the text explains alternative approaches). The contents of the table report subjective values of the probability that each future will occur if the Air Force adopts each policy package, as well as the magnitude of damage to U.S. national security interests that would occur in each future for each policy package.

Table S.1
Structure of the Basic Scorecard, with Notional Contents

Future Dominated by Threat Listed	Risk Measure	Alternative Policy Package					
		0	1	2	3	4	5
		Current Force	Operate from FOB Against Anti-Access Threat	Large-Scale COIN with U.S. Forces	Partners for Irregular Warfare in Many Countries	Conduct Air Operations Exclusively from Long Range	Operate from FOBs Under Nuclear Attack
Natural disaster	Magnitude	2	2	2	2	2	2
	Probability (%)	15	15	15	15	15	15
State failure	Magnitude	4	4	2	4	3	4
	Probability (%)	7	7	7	6	7	7
High-loss terrorism	Magnitude	7	6	6	5	6	6
	Probability (%)	15	15	15	13	13	15
Major insurgency	Magnitude	3	3	2	1	3	3
	Probability (%)	45	45	45	30	45	45
Traditional conventional conflict	Magnitude	4	4	4	4	3	4
	Probability (%)	4	4	4	4	4	4
High-tech conventional conflict	Magnitude	8	4	8	8	5	4
	Probability (%)	7	5	7	7	5	5

Table S.1—Continued

Future Dominated by Threat Listed	Risk Measure	Alternative Policy Package					
		0	**1**	**2**	**3**	**4**	**5**
		Current Force	Operate from FOB Against Anti-Access Threat	Large-Scale COIN with U.S. Forces	Partners for Irregular Warfare in Many Countries	Conduct Air Operations Exclusively from Long Range	Operate from FOBs Under Nuclear Attack
State nuclear use/threat	Magnitude	20	16	20	20	13	10
	Probability (%)	7	6	7	7	6	5
Low-risk future	Magnitude	2	2	2	2	2	2
	Probability (%)	0	3	0	18	5	3

NOTES: FOB = forward operating base; COIN = counterinsurgency.

The subjective values presented in the table are notional and offered here for illustration only.[1] For a scorecard of this kind to be useful, it must reflect consensus subjective beliefs of the senior leadership of the Air Force.

The document explains methods that senior leaders and their planning staffs can use to identify such beliefs. To implement such a scorecard, Air Force planners must work with senior leaders to develop information about three things: (1) what futures senior leaders should focus on during a planning cycle, (2) what policy packages deserve the attention of senior leaders during a planning cycle, and (3) how senior leaders can identify and validate the likely probability and magnitude of damage to U.S. national security interests for each future and policy package. The remainder of this summary briefly reviews each of these key elements of the scorecard and closes with a brief description of the benefits that such a scorecard should provide to senior Air Force leaders and their planners.

Choosing Relevant Futures

Each future in Table S.1 reflects one generic threat type that could dominate the environment in which the Air Force operates over the planning horizon. Generic threat types are a basic building block of our risk assessment. Even when comparing the performance of offensive and other proactive capabilities, we assess them in terms of their ability to mitigate the risks associated with a mix of threats by reducing the probabilities and/or magnitudes of damage to U.S. interests in alternative futures where these threats exist. The framework can be applied to any planning horizon.

We used a three-step process to identify a small number of threat types that we could use to frame the analysis described below and the most salient threat within each type against which the Air Force can plan. Air Force planners could apply these steps with different assump-

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[1] Probabilities sum to unity across futures for each policy package. Magnitudes reflect subjective judgments about relative levels of damage scaled to a score of 1 to 20, with 20 reflecting the highest value of damage. For more information about how each future and policy package shown in this notional table is defined, see Appendix F.

tions to develop alternative sets of threat types and most salient threats that they might prefer.

In the first step, we surveyed the unclassified literature on threats identified in recent years; Air Force strategic planning would, of course, examine classified sources as well. This survey generated the expected "parade of terribles"—a bewildering and depressing catalog of everything that might go wrong over the next decade or so.

In the second step, we used characteristics that these potential threats shared to develop a taxonomy that grouped the vast majority of them into what ultimately became the seven categories of threats that dominate the first seven futures shown in Table S.1.[2] The threats included in each of these categories tended to share similar causes and effects and to exhibit similar dynamics over time after they became active and not just potential threats. These commonalities suggested that defense planners could often use similar strategies and forces to mitigate the risks associated with threats grouped in each category.

The final step identified a set of detailed scenarios associated with each threat type and asked which would require the greatest U.S. effort to mitigate the threats associated with it. This most stressful scenario became the most salient threat, which we would use to represent other threats that might arise in this category. In this analysis, we qualitatively considered factors that could affect the likelihood and magnitude of damage to U.S. interests relevant to each threat and the adequacy of Air Force capabilities and capacities to address each threat, particularly the capacity to react effectively to potential surprises that might emerge if each threat occurred.

Choosing Relevant Policy Packages

Policy packages must be matched to the planning horizon and level of planning. As we considered risks relevant to Air Force–wide strategic force planning over the next 15 years, we found that alternative packages are most meaningful when each emphasizes a distinctly different major capability. They should also be designed to "span the policy

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[2] The last future—the so-called "low-risk future"—is an analytic construct explained in Appendix C.

space" implied by the set of futures chosen above. That is, they should offer concrete, qualitative alternatives potentially available to the Air Force with which to mitigate risks identified in relevant futures. To sustain the engagement of senior leaders and to allow in-depth analysis of each package seriously considered, planners should limit the number of packages examined in this approach. Within any planning cycle, we would expect the definition of such packages to evolve as leaders and planners identify hybrid packages that better match their beliefs and priorities about the future. Policy Packages 1 through 5 in Table S.1 are examples of packages that the Air Force might implement with an increment in resources above the programmed force in Policy Package 0.

## Assessing Probabilities and Magnitudes of Damage

As noted above, futures comprise sets of posited threats. Given any threat in a future and a chosen policy package, what is the likelihood that the threat will actually manifest itself over the planning period? How can the United States affect that likelihood? If the threat manifests itself, how likely is open conflict? What would be the consequences of conflict or a U.S. decision not to respond to a manifest threat? We provide a disciplined way to ask these questions and build answers to them that culminates in a subjective assessment of the probability and magnitude of damage relevant to the scorecard in Table S.1.[3] Figure S.1 summarizes how we do this in four steps.

The approach begins by placing any "most salient threat" of the type described above in a regional as well as a global context that identifies players relevant to the threat and their primary interests. It assesses the balance of interests relevant to the threat to determine what, broadly writ, the benefits and costs of any potential conflict might be for the primary players. This is an initial scoping step.

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[3] This process is detailed in Chapter Four. Appendixes D and E illustrate the approach with applications to salient threats associated with a confrontation with China in the Taiwan Strait and an insurgency in the Solomon Islands, respectively.

Figure S.1
Summary of Method for Assessing Probabilities and Magnitudes of Damage to U.S. National Interests
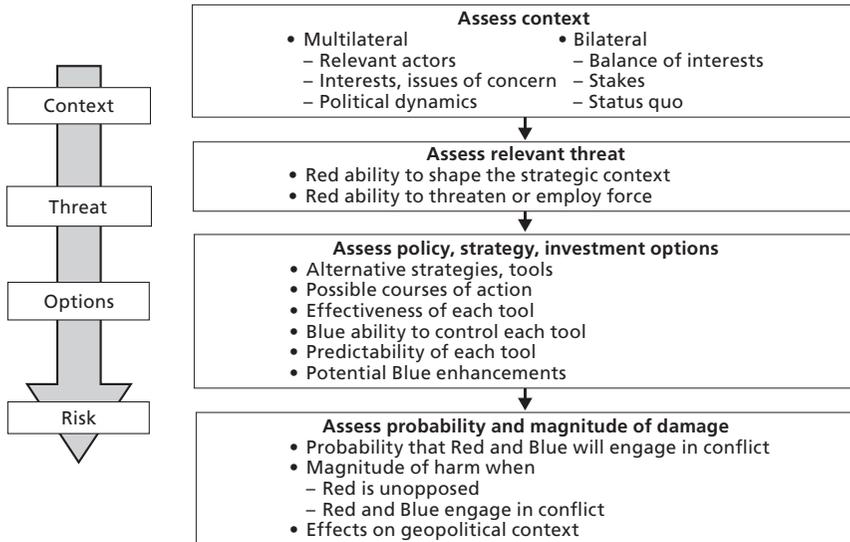
RAND *MG827-S.1*

Based on information from this first step, the approach then assesses what actions "Red"—any potential opponent—might take. This depends on Red's capability to act and what it might gain from acting. Action can take many forms, from, at one extreme, efforts to persuade other relevant players to change their positions to, at another extreme, direct use of force to secure Red's interests, including use of force against "Blue"—the United States and its allies. These actions make up the threat space that we might associate with any most salient threat.

The third step considers the options available to the United States to counter any Red action. Like Red, Blue has a broad set of available actions, ranging from persuasive to coercive, with which to shape the environment relevant to any threat, deter Red from acting if possible, and apply military force if necessary. This step considers alternatives as COAs and asks how effective each COA is, how predictable its effects are, how much control Blue has over it, how changes in Blue capabil-

ity or capacity might change the answers to these questions, and so on. This step characterizes the risk-mitigation space available to Blue.

The information developed in the first steps provides the basis for assessing the likely interaction between Red and Blue, each with specified options available, in the context of a particular most salient threat. This analysis works through these Red and Blue options using a simple tree diagram that considers, for each option, a Red action, a Blue decision to respond or not in a particular way, and the consequences for Red and Blue of each sequence. This analysis provides a basis for ultimately assessing the likelihood that Red will act in a particular way and the consequences for Blue. These likelihoods and consequences provide the basis for a consensus subjective assessment of the probability that the most salient threat will become active during the planning period and, if it does, what damage it would do to U.S. interests.

The sequences of decisions assessed in this step are too complex to examine in any but a subjective way. We seek to improve such subjective assessments by documenting the judgments underlying any final assessment. We seek to make any assessment more transparent and to simplify the application of sensitivity analysis to assess the implications of alternative beliefs about the future.

Working together, senior Air Force leaders and their planning staffs can apply this approach to fill the contents of a scorecard like that in Figure S.1 and adjust these contents as circumstances change. Doing this will be challenging and will take time and resources, both to develop the capabilities and specific processes to do this within the Air Force and to apply these capabilities and processes to fill out any scorecard for an actual set of futures and policy packages. We envision this approach as an integral part of planning that continues over a series of planning cycles. If this occurs, each planning cycle can build on assessments completed in earlier cycles and thereby limit the difficulty of keeping the scorecard current.

Expected Benefits of the Scorecard

The scorecard described here can enhance the USAF's force-planning and resource-allocation efforts in the following ways.

Give Decisionmakers a More Visceral Sense of the Persistent Presence of Uncertainty and Its Implications for Policy Decisions

The approach described above seeks to do this in two ways. First and most directly, it highlights the range of risks that remain active after senior leaders have committed themselves to a preferred package of policies and resources to apply over the planning horizon. Many futures can occur over that planning horizon; a final decision on a plan cannot wash away much of the uncertainty that will affect the success of that plan. (See pp. 103–107, 112–113.)

Second, the approach draws on an active, structured interaction between decisionmakers and their support staffs to elucidate the leaders' subjective beliefs about key uncertainties (p. 114). The approach recognizes the primacy of the subjective beliefs of Air Force decisionmakers (pp. 106–107). That said, it gives them a language that should help them express their intuitive beliefs more precisely (pp. 107–110). In particular, it encourages them, throughout the planning process, to think more clearly about how much they really "know" about the future.

Filter and Aggregate the "Parade of Terribles" So That Decisionmakers Can Focus Planning on the Most Salient Threats

A short list of generic threat types, like those discussed above, can capture the most important features of a long list of threats that Air Force planners have had to consider in recent years. As a result, planning against a few generic threats can potentially prepare the Air Force for dealing successfully with most of the "terribles" it might face. (See pp. 47–65, 209–215.)

Help Decisionmakers Better Understand and Communicate the Policy-Relevant Consequences of "Taking Risk" When Resource Shortages Occur

The approach described above highlights the close link between risk and resource constraints; decisionmakers and planners cannot make meaningful statements about risk—the potential for damage to our national interests—without placing their planning activities in a resource-constrained environment (pp. 103–104). That said, the approach is intended to induce decisionmakers and planners to focus more on the risk side of this relationship than on the resource side. It does this on two levels:

1. It asks decisionmakers to assess their beliefs about the probability and magnitude of damage to national interests that they associate with various threat types *when they have specified packages of policies and resources available* (pp. 18–32, 91–102).
2. It asks planners to think about how the various threats that might become active during a planning period compete for the capacities of key capabilities present in the Air Force (pp. 47–65).

When resource shortages exist in this setting, operational commanders must trade off one source of potential damage to the national interest for damage from another source.

    As noted above, the approach focuses on giving decisionmakers and planners a more precise language to talk about their subjective beliefs about uncertainty. As they adopt this language, they should also be able to use it to communicate more effectively—decisionmaker to staff, operator to planner, peer to peer, and Air Force advocate to any stakeholder outside the Air Force. (See pp. 108–110, 114.)