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COMMENT

Defense planning when major changes are needed

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ABSTRACT

The principles and formalities of modern U.S. Defence planning stem from the 1960s and have largely served well. This paper, however, is about the special challenges that arise when major changes have been needed, some even transformational in character. It discusses how changing realities, independent studies and analysis, events, leaders, and political processes have led to changes not easily instigated within normal processes. Several examples are discussed for the period 1976–2016. Today, the United States and allies again face major challenges that require major military changes. Those have not yet been decided, much less accomplished. The paper draws on lessons from earlier periods to identify obstacles to and mechanisms for change. The last section focuses on defence *analysis*, which has sometimes been an obstacle but can be part of the solution. The paper urges a new ethic for analysis and the analysts who perform it.

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Introduction

This paper stems from an invited presentation in 2017 to a workshop on defence planning held at the Centre for Military Studies in Copenhagen. The paper is drawn from the author's experiences as a planner in the U.S. Department of Defence (DoD) and observations from many subsequent years of research, often conducting studies for senior DoD planners and other officials (Davis 1994, 2014). Supporting detail can be found in the publications cited.

The paper's first theme is that in thinking about defence planning we should recognize the special needs associated with major changes, e.g., with changes that are against the grain and are sometimes even accompanied by such adjectives as "transformational" or "revolutionary." A second theme is that the changes should often emphasize planning for adaptiveness rather for a particular vision of the future.

The paper's structure is as follows. Section 2 reviews basic elements of defence planning. Section 3 discusses four instances in which major changes have been needed, which could not easily be accommodated by the normal processes. A number of unusual mechanisms were then used to deal with obstacles. Section 4 focuses on the particular obstacles created by normal analysis processes and methods for doing better.

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Core elements of defence planning

Basics

Defence planning, the DoD's version of strategic planning, is the deliberate process of deciding on a nation's future military forces, force postures, and force capabilities. It is distinct from operations planning, about how to employ forces in war. The core elements of defence planning trace back to Robert McNamara's reforms introduced in 1961. A major contributor was Alain Enthoven, who headed McNamara's new Systems Analysis office. Enthoven expressed tenets of defence planning and analysis that were rooted in rational-choice theory. They have endured for more than a half century, as evidenced by their endorsement by officials in 2005 when Enthoven's book was reissued (Enthoven and Smith 2005).

Enduring Tenets about Analysis and Planning

(1) Decisions should be based on explicit criteria of national interest, not on compromises among institutional forces.
(2) Needs and costs should be considered simultaneously.
(3) Major decisions should be made by choices among explicit, balanced, feasible alternatives.
(4) The Secretary of Defense should have an active analytic staff to provide him with relevant data and unbiased perspectives.
(5) A multiyear force and financial plan should project the consequences of present decisions into the future.
(6) Open and explicit analysis (including transparent data and assumptions) available to all parties, should form the basis for major decisions.

The U.S. Planning, Programming, Budgeting, and Execution system (PPBE) is the procedural element of defence planning and is similar to the system that it replaced (Grimes 2008, Tulkoff *et al.* 2010). It is the process by which the U.S. Department of Defence (DoD) allocates resources. The process attempts to be goal oriented with decisions guided by objectives, strategy, and policy. Alternative ways of achieving these objectives are evaluated, their costs estimated, and choices made on a portfolio of programs. Budgeting then maps the decisions into a multiyear timeline of expenditures consistent with the Department's resource stream. Execution refers not just to conducting the programs, but also to monitoring results and adjusting.

The DoD's PPBE has been criticized for decades and its effectiveness reviewed skeptically (Rosen 1984, Mintzberg 1994, Tama 2015). Complex processes are natural targets for critics, both petty and serious. Interestingly, however, thoughtful reviews have typically concluded that Enthoven's *tenets* are more important than details of process and that the DoD's process has proven adaptive to the preferences of successive Secretaries (Chu and Bernstein, 1983). Further, senior executives inside and outside government have commonly claimed that – despite its many imperfections in practice – the PPBE is the most effective planning system in the U.S. government.[1] For ordinary purposes, that may well be. Nonetheless, this paper discusses some particular chronic shortcomings of *mainstream* aspects of the PPBE. DoD leaders have managed to cope, but the paper argues that defense

planning should be understood to include not only "mainstream processes" but also the kinds of special mechanisms described below. Recognizing this, and lessons from the past, may make future coping easier.

Characteristics of defence planning as practiced

As a student of management theory would expect, DoD's complexity necessitates establishing order through such mechanisms as doctrine, routine processes, standards, metrics, rules, and requirements. These features help greatly in establishing coherence and promoting predictability, efficiency, and effectiveness. They can also cause problems, however, as discussed in the scholarly literature on strategic planning generally (Quinn 1980, Pascale 1991, Mintzberg 1994, March 1996, Mintzberg *et al.* 2005). The troubles include increased organizational inertia and sluggishness even when change is needed. Ultimately, there is a constant tension between continuity and change. The present paper illustrates several types of problem, but then focuses on some particular culprits related to over-standardizing planning scenarios, models, and data, and on over-valuing organizational consensus.

When defence planning has special problems

Cases considered

Most aspects of defence planning can be treated straightforwardly with normal mainstream processes, but special challenges arise (more so in some periods than others, but arguably in all periods). These may come about because of, e.g., (1) new or newly recognized threats; (2) technological changes; or (3) shocks, such as failures in war.

This paper uses examples from various periods as indicated in Figure 1. They involve (1) building overseas contingency capability with rapid deployment forces (early 1980s); (2) introducing precision fires, precision navigation, and the information era (accelerating in the late 1990s) (Era A); (3) building capabilities for counterterrorism and counterinsurgency (2001-); and (4) today's era (Era B). Not all of these were "transformational," but all involved big changes difficult to accomplish.

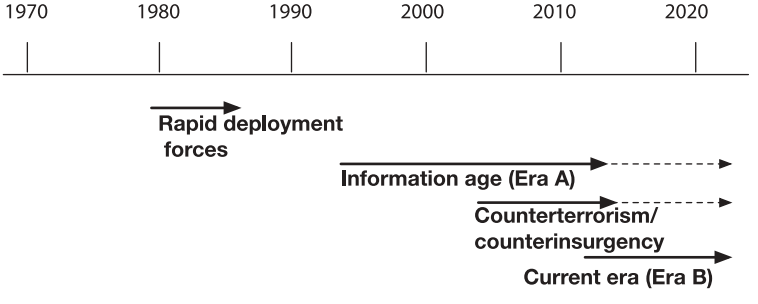


Figure 1. Selected Periods of Change.

Rapid deployment forces

President Jimmy Carter's National Security Council (NSC) reviewed strategic issues in 1977 and, as part of that, observed a military vacuum in the Persian Gulf region, i.e., Southwest Asia.[2] A Presidential Review Memorandum (PRM 10) and a subsequent Presidential Directive (PD 18) included a call for a DoD study to address the vacuum. PD 18 (originally Top Secret, but now available on the web) stated that the United States "will maintain a deployment force of light divisions with strategic mobility independent of overseas bases and logistical support…for use against both local forces and forces projected by the Soviet Union…" This led to a two year effort, the "Wolfowitz Report."[3]

Doing something about the problems identified in PD 18 proved challenging. Those involved in the Wolfowtiz report saw the problems as including (Davis 1982):

(1) *Preexisting problems and related inertia*. The DoD had long focused on Europe's Central Region and Korea. Conventional defence of both were very difficult and available resources were inadequate for these preexisting demands.
(2) *Lack of immediacy*. Persian Gulf problems were abstract. The last thing that most officials or officers wanted to hear about was a new problem area, especially one that seemed to pose no imminent threat.
(3) *Organizational resistance to seeing new strategic problems*. Many senior and most officials did not see potential threat in the region.
(4) *Vested interests and incentives*. Most military officers saw their leadership opportunities as connected with the Central Region (i.e., preparing for the battle in the Fulda Gap) or perhaps Korea, but not in some backwater called Southwest Asia.
(5) *Standard analysis processes and methods*. Mainstream analysis focused on standardized Central Region and Korean scenarios with large-scale head-on-head attrition warfare in which only tanks appeared to have value. Such analysis of standard scenarios saw little value in the kinds of forces and mobility capabilities emphasized in the Wolfowitz study.

The study was issued in 1979, not long after the Iranian revolution and embassy seizure had shaken some of the complacency about the region. The study laid out relatively modest initiatives for improving capabilities for *whatever* military contingencies might arise in the region. Most responses to the study were initially tepid, including those of Secretary Harold Brown, who disliked the report having highlighted an Iraqi invasion of Kuwait as one possible scenario (the other primary scenario involved a Soviet invasion of Iran). Brown saw Iran as the bigger regional threat (Keefer 2017, 334). The Soviets then invaded Afghanistan in December 1979 and attitudes changed discontinuously. Because of the invasion of Afghanistan and other indicators, the perceived plausibility of a Soviet threat to Iran and the Persian Gulf went up – so much so that conventional wisdom at high level focused exclusively on the Soviet threat. This was in contrast to the 1979 study, which had considered both Iraqi and Soviet invasion threats without regarding either as "likely." The study had emphasized having broad expeditionary capabilities for both deterrence and coping with whatever events arose.

The politics had also changed (for other reasons), making more money available to the DoD. Real growth began again toward the end of the Carter administration and accelerated thereafter. Because of the prior staff work and cooperation among top officials,[4] it proved possible quickly to move a number of program initiatives into the 1980 budget. Some were relatively incremental (e.g., some improved strategic mobility), but one was anything but: creation of a new military command. This was the Rapid Deployment Joint Task Force (RDJTF), which in 1983 become U.S. Central Command (USCENTCOM) (Bliddal 2011). Establishing the new command was exceptionally important. It indicated seriousness and created a new constituency for the capabilities. The RDJTF was led by Lt. General Paul X. Kelley of the Marine Corps, who later became Commandant of the Marine Corps. That was significant because the Marine Corps had competed for leadership in the mission, promising significant changes in doctrine to establish credibility.

The new capabilities paid off a decade later. The Soviet threat never materialized, but Saddam Hussein invaded Kuwait. By then, the United States had military forces and a military command able to deter further aggression against Saudi Arabia, to launch a counteroffensive, and to defeat Saddam's forces handily. Ironically, this was despite the fact that during most of the 1980s the "normal processes" of defence planning and operations planning had led USCENTOM to focus almost exclusively on the Soviet threat. Only in 1990 did it begin to plan for an Iraqi threat, after being directed to do so by the Chairman of the Joint Chiefs of Staff, who was himself being prodded by Under Secretary Wolfowitz (Department of Defense 1992). Planning was in its early stages and Saddam's invasion was a big surprise, but U.S. capabilities permitted rapid adaptation as described in an official command history (Hines 1999).

In summary, the changes that occurred involved (1) top-down strategic guidance; (2) non-standard scenarios and analysis in a study driven by a single organization (OSD's Office of Program Analysis and Evaluation) concerned with uncertainty and largely unencumbered by department-wide processes and committees; (3) accidents of politics; and (4) civilian officials getting "out of their lane" by urging changes of the command system. The normal routines of defence planning played little role initially, but the changes – once decided by policymakers – were accommodated by the PPBS, in part because OSD(PA&E) led the PPBS process. The related programs flowed into the budgeting process and were largely enacted as intended. Further, after review, they were embraced and expanded by the Reagan administration – remarkable in itself because incoming administrations usually look quite negatively upon programs that they inherit.

Transformation efforts of the late 1990s and early 2000s

In the 1991 Gulf War, the United States Air Force conducted some strikes with precision weapons, demonstrating to those who watched (including the Soviets) that a revolution in military affairs was occurring (Lambeth 1992). Remarkably, however, much of the defence establishment barely noticed. Much of defence planning went on as usual with the same standard forces, scenarios, and models. These called for large head-on-head attrition battles of ground forces, governed by models designed and calibrated from the experiences of World War II. As of 1996, the Department's senior leaders were largely somewhat smug about the suitability of the forces they already possessed: their primary concern was the need for recapitalization after a period of underfunding.[5]

Advocates for change certainly existed both inside and outside government, but they were sometimes seen as radical or technology-captured.[6] With some justification, the term "transformation" was often criticized as hype. The DoD's policy report in 1993 (Aspin 1993) gave no hint of major changes; the first Quadrennial Review (Cohen 1997) had a chapter on transformation but little guidance or funding – a shortcoming quickly criticized by an independent review panel (National Defense Panel 1997). After the election of 2001, President George Bush and Secretary of Defence Donald Rumsfeld championed transformation efforts.

Although this is not always recognized because so many events occurred in the 2000s, the transformation was largely successful, although implemented incrementally, consistent with discussion of Quinn years ago (Quinn 1978). After the decisions were made, programs and initiatives followed reasonably well, although defence secretaries had to exert personal pressure to accelerate introduction of unmanned aerial vehicles, cancel programs (e.g., *Comanche)*, and to reduce the size of legacy programs (e.g., the F-22).

How did the changes occur? It was not because of routine defence planning or defence analysis. For example, *mainsteam* analyses throughout most of the 1990s included but underestimated the future effectiveness of precision fires; it ignored special operations forces and mostly continued to focus on classic attrition battles of ground forces. The impetus for change came from independent analyses, some special in-government studies (Bexfield 2001), and some leaders. Further, mainstream PPBS analysis sometimes failed to pick up on opportunities because of artificial boundaries in the budgeting process. For example, since precision weapons were expensive compared with "dumb bombs," the routine budget processes allowed only modest purchases – a sub optimization that persisted for some time.

Major changes, then, were introduced in a short period of time. The 2003 invasion of Iraq demonstrated U.S. military prowess in then-modern manoeuvre warfare. It culminated years of development and training (Jensen 2018). The changes were remarkable, whether or not the wars themselves were good ideas or disasters, whether or not the ideas were fully and consistently implemented, and whether or not the changes were sufficient for war winning.

Counterterrorism and counterinsurgency

The third period of major change occurred in the 2000's. Some of the changes extended information-age developments, but others were of a different character.

Late in 2001, after al-Qaeda's attack on the Twin Towers and the Pentagon, the United States found itself in war deep within Afghanistan. This was a war like none other, with special operations forces playing a prominent role, sometimes famously from horseback but with real-time connections to aircraft with precision weapons as well as to local tribal forces. There had been no planning scenarios akin to the operation. Nor was there suitable doctrine. Instead, military officers developed tactics ad hoc, with some Air Force commanders awed by what they saw as an emerging new mission allowed by the revolution in military affairs (Thiesen 2003). So also, command and control relationships on the ground were worked out ad hoc to deal with the special contextual details (Rhyne 2004).

As mentioned above the initial manoeuver phase of the Iraq war went extremely well in 2003, demonstrating the power of the information-age changes. However, the U.S. military was utterly unprepared for the ensuing insurgency, which political leaders were slow in acknowledging. Matters turned into what has been called a fiasco (Ricks 2006).

Given the nature of conflict (insurgency rather than large-scale manoeuvre wafare), change was again necessary. Much of the impetus for change came from Generals James Petraeus (Army) and James Mattis (Marine Corps). One result was a new counter-insurgency field manual (Nagl *et al.* 2007). Perhaps most famously, the manual identifies the public of the conflict area to be a "center of gravity" and focuses not on kinetic warfare but rather on diverse activities to gain that public's support: by providing security and in other ways. A directive by General Petraeus in 2009 illustrates how different the new focus was to be (U.S. Central Command 2010):

> . . .the center of gravity in this struggle is the Afghan people; it is they who will ultimately determine the future of Afghanistan . . . Prior to the use of fires, the commander approving the strike must determine that no civilians are present. If unable to assess the risk of civilian presence, fires are prohibited, except under one of the following two conditions (specific conditions deleted due to operational security; however, they have to do with the risk to ISAF and Afghan forces).

Necessity was the mother of change in this case, but the changes drew on an older Marine Corps Small Wars manual (U.S. Marine Corps 1940) and the advice of social scientists. That said, the remarkable prowess developed in using special operations forces, air forces, and networked information was due to operational commanders and their staffs, who mastered application of new networking technology (McChrystal 2011).

Once again, what this transformation did *not* depend on was mainstream defence planning or its analysis. Moreover, senior civilian officials laboured mightily to provide what was needed in the war zone because the normal processes were so cumbersome. They had to create separate fast-track procedures.[7] Even then, the personal intervention of Secretary of Defence Robert Gates was necessary to force deployment of the Mine Resistant Ambush Protection vehicle (MRAP) (Gates 2014). Prior efforts to move it forward had been repeatedly stalled by the planning process because the MRAP was expensive and unlikely to be useful in what planners saw as normal military operations. Gates was more concerned about the lives of soldiers in the field than the niceties of long-term cost-effectiveness analysis.

The changes championed by General Petraeus and others were profound and the case fits well into this paper's theme. This said, the changes in technical capabilities, operational concepts, and organization were not enough to compensate for failures of strategy or the shortcomings of partner governments. Many papers exist on the failures of U.S. efforts in Afghanistan and Iraq over the last 17 years, including papers that decry the naïve enthusiasm that some had for counterinsurgency strategy a decade ago (Eikenberry 2013). That said – even if one agrees with the criticisms – the criticisms have to do with national and military strategy, not with defence planning.

The current era

The paper's last case is ongoing. Era B is a name given twenty years in reference to the period in which we now live. It follows an Era A (Figure 1) during which the United States enjoyed "overmatch" – the result of precision navigation, precision weapons, stealth, network centric operations, and other developments of the information age. As foreseen in 1998, Era A proved to be quite favourable to the U.S. and its allies militarily when fighting large battles, but – as foreseen in 1998 (Davis *et al.* 1998) – Era B is proving to be unpleasant due to the diffusion of technology and adaptation by adversaries, developments such an anti-access and area denial, North Korean nuclear weapons, and hybrid warfare. Further, impending discontinuities can be seen as a perfect storm (Figure 2) (Davis and Wilson 2011). Probably to the chagrin of the paper's authors, the paper has proven to have been too *optimistic*: it did not anticipate Russia's re-emergence as threat nor the rise of ISIS. Table 1, from that study, depicted the problems in terms of U.S. capabilities then and now (Era A and Era B). The problems are better recognized today, but are no less serious.

A troublesome feature of the new-era difficulties is that it requires being prepared to deal with different kinds of war and what some see as different revolutions in military affairs. As emphasized by Peter Wilson, these are not sequential but rather intertwined with complex action-reaction cycles as indicated in Figure 3. This includes revolutionary tactics (as in insurgencies) and gray-war tactics, rather as anticipated years ago (Van Creveld 1991), as well as advances in high-end warfare as the information-driven changes continue.

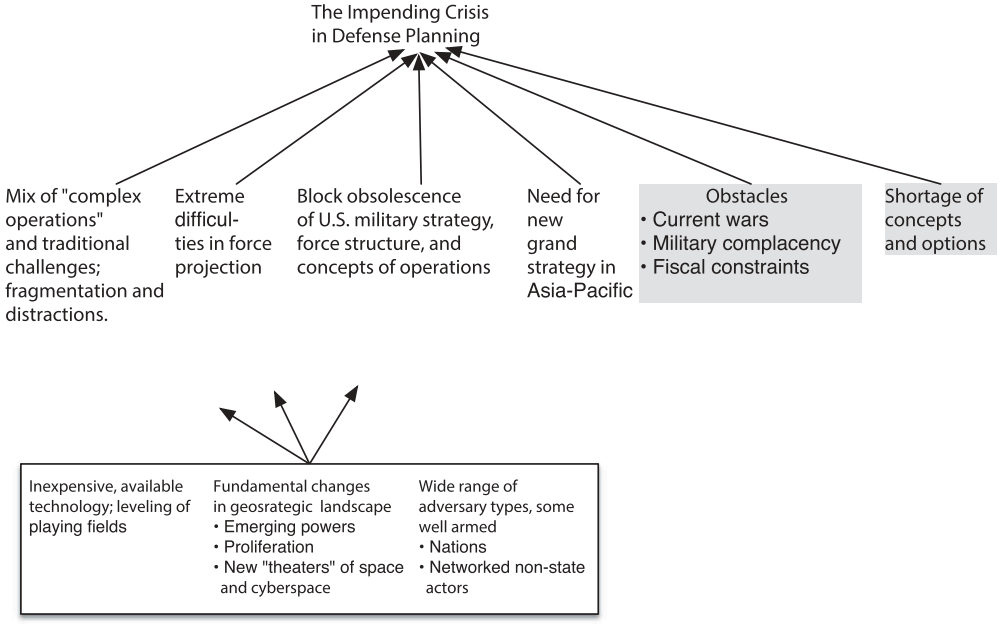
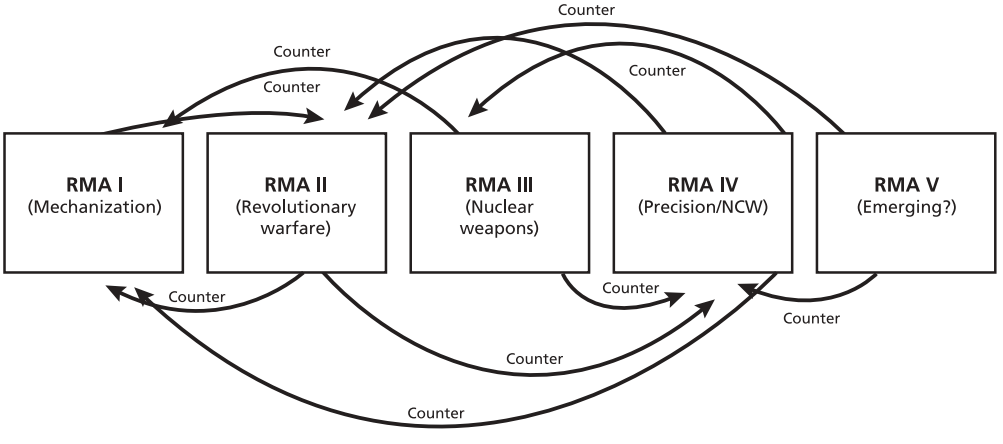


Figure 2. The impending crisis.

Table 1. U.S. capabilities then and now

Component	Previously	Now, and Increasingly in Near Future
Limited forward presence	Nonproblem	Restrained but not especially risky
Large-scale deployments to regional waters and bases	Nonproblem	Risky due to vulnerable bases and regional waters; risks stem from AIP submarines and precision antiship weapons (including land-based missiles); large standoff ranges will likely be needed.
Broad naval supremacy	Nonproblem	Challenges exist but are much less when not in close-in regional waters.
Achieving air supremacy	Nonproblem	Nonproblem in most domains, but not, e.g., close to Chinese mainland
Suppressing air defenses	Destruction is difficult because of cover and deception but suppression is quite feasible.	Risky for above reasons and advanced mobile and man-portable surface-to-air missiles
Offensive air operations	Strategic strikes are possible early with stealthy aircraft; large-scale operations are a nonproblem after suppression of air defenses against fixed and known high-value targets.	Risky and difficult because of modern air defenses, the need for long-range operations, and the difficulty of finding mobile and hidden high-value targets
Entry of traditional ground forces and infrastructure	Nonproblem after gaining air supremacy	Risky because of vulnerabilities of forces during entry and of bases and other logistics. Area weapons pose special concerns.
Later ground-maneuver operations with close air support and battlefield shaping	Supreme skill of U.S. forces Moderately risky, with air support constrained due to residual SAMs, and with vulnerabilities to residual precision weapons	Moderately risky, with air support constrained due to residual surface-to-air missiles, and with vulnerabilities to residual precison weapons
Large follow-up operations (e.g., stabilization in large countries)	Feasible on a small scale, or on the Iraq scale with mobilization; forces at risk due to improvised explosive devices and other asymmetric tactics; large manpower requirements	Feasible on a small scale, or on the Iraq scale with mobilization; operations are risky for adversaries having precision or area weapons and some defenses against drones. Special needs for mine-resistant vehicles, persistent surveillance and substantial manpower.

Scale from very dark: feasibility is in question to white: feasible with acceptable risk.



NOTE: NCW = network-centric warfare.
RAND *OP326-2.1*

Figure 3. An era of intertwined revolutions in military affairs.

These challenges of Era B have hardly been lost on the Department of Defence. Secretary Hagel announced a "third-offset" strategy that, under successive Secretaries, has been attempting to exploit technology to maintain U.S. advantages (Hagel 2014, Work 2015). The jury remains out on what will emerge and how effective the changes will be. The Department has created a special office (the Strategic Capabilities Office (SCO)) and leaned on the Defence Advanced Research Projects Agency (DARPA) for innovations. The Defence Innovation Initiative is reaching out to Silicon Valley and other special sources of innovation. The tack being taken is very much different from that of normal processes. A recent paper refers to it as a case of "metagovernance" (Christiansson 2018).

The third-offset strategy has again included DoD officials going outside normal analysis channels. Actually, senior DoD officials have found themselves dissatisfied with mainstream analysis for some years. In the middle 2000s, they expressed dismay at receiving plentiful analysis on the kinds of problems that the community knew how to analyze (kinetic wars with major powers) but little or no analytic help on either the problems of the day (counterterrorism and counterinsurgency) or possibly catastrophic developments. They dramatized this by distinguishing among irregular, traditional, catastrophic, and disruptive threats and noting that the analysis they were receiving focused heavily on the "traditional" category. Thus, they firmly admonished the analytic community into broadening its horizons (Henry 2005). Given the forceful nudging, DoD's analytic community responded, especially with in-depth studies of the social science that should underlie counterterrorism and intervention,[8] as well as studies on the implications for high-end warfare of the continuing but maturing revolution in military affairs (Watts 2011). As of 2018, mainstream research and analysis is focusing on the high-end threats, including those in the realm of cyberspace.

It is not possible as yet to know how well the United States will respond to today's challenges, nor to know how its allies will do in this regard (Fiott 2016).

Observations from across the cases

Each of the cases above was different in kind as were mechanisms for addressing the challenges. Some generic features, however, cut across the set. Some of these are well described in the academic literature (e.g., addressing vested interests and incentive structures; having good leadership; recognizing that strategic planning and developing strategy are different). Many of these items are covered, for example, in Mintzberg's classic critique of strategic planning (Mintzberg 1994, Mintzberg *et al.* 2005). This paper elaborates somewhat on obstacles involving two related matters: failures of imagination and failure to confront deep uncertainty in analysis.

Failures of imagination

The term "failures of imagination" became famous after the Congressional report on the 9–11 catastrophe (National Commission on Terrorist Attacks 2004). As Chairman Thomas Kean noted:

> We were unprepared. We did not grasp the magnitude of a threat that had been gathering over a considerable period of time. As we detail in our report, this was a failure of policy, management, capability, and, above all, a failure of imagination.

Keane goes on to say that the 9/11 attacks were a shock, but should not have come as a surprise. The report's Chapter 8 is entitled "The System Was Blinking Red." But, as noted, "no one looked at the bigger picture; no analytic work foresaw the lighting that could connect the thundercloud with the ground" (p. 277). In one of the pithier passages of the report, the authors note "Imagination is not a gift usually associated with bureaucracies." (p. 344).

What can be done to avoid such failures? A good deal of literature exists on related matters, including a literature on thinking the unthinkable and using alternative scenarios (e.g., (Schwartz 1995, Wilkinson and Kupers 2003)). Some authors emphasize the need to maintain tensions (Pascale 1991, 1999). Another strand discusses analytic methods for planning under uncertainty generally, but with national-security issues in mind (Davis, 2003). One book specifically discusses avoiding strategic surprise in national security matters (Bracken *et al.* 2008). There is no shortage of methods for overcoming the problem of failures of imagination – if merely leadership wants to do so.

Implications about analysis for defence planning

Although shortcomings of analysis are only some among many obstacles to making important changes, they should be of particular interest to readers of *Defence Studies*. They relate to improving the imaginativeness of analysis (not just strategic thinkers) by foreseeing possibilities *and* using analysis to assist decisionmakers in planning accordingly.

A theme of related work has been the need for strategic planning to address *deep uncertainty*, something notably absent in mainstream defence analysis. This refers to materially important uncertainties that cannot be adequately treated as simple random processes and that cannot realistically be resolved at the time they come into play.[9] Raising the issue of deep uncertainty often conjures up images of paralysis by analysis, but that no longer needs to be a problem. As discussed in a recent study (National Research Council 2014, 36),

- Considerable technical progress has been possible due to the confluence of theoretical work, computational advances, empirical psychology, and other efforts. Addressing deep uncertainties need not mean paralysis; instead, it means pragmatically recognizing and bounding them, assessing the relative significance of the many such uncertainties, and identifying hedges and adaptations.

To exploit the advances it will be important for analytic organizations and analysts within them to revise their conception of their responsibilities. A suggested approach has been called "the FARness Principle" (Davis 2014).

- Analysis should help leaders find strategies that are flexible, adaptive, and robust: *Flexible* to accommodate changes of mission, objectives, and constraints; *Adaptive* to circumstances; *Robust* to events such as positive or negative shocks
- Leaders should demand analysis that does so.

A number of authors have made similar recommendations in various fields, although using different words or different connotations of words to mean the same thing, as in planning for adaptiveness (Davis *et al.* 1996, Pascale 1999), robust adaptive strategy (Beinhocker 1999), agility (Alberts, 2011), or robust decisionmaking (Lempert *et al.* 2003). The semantic confusion should not obscure the considerable consensus.

The FARness principle suggests a new responsibility for analysts. Analysts already have an ethic of making their assumptions known. This is excellent but not sufficient. The FARness principle suggests the following additional professional obligations:

- Routinely show how results vary with the major assumptions on which there is or should be disagreement; *it is not sufficient to show sensitivities to only one or a few issues while ignoring others that are also important*.
- Routinely identify and assess options for FARness, showing the value of affordable hedges to policymakers even in periods of austerity when hedges may seem like luxuries.

This contrasts starkly with the usual practice of mainstream defence analysis, e.g., the emphasis on standard scenarios, models, data bases, and measures of effectiveness, and on "optimization" based on them.

What would such planning and analysis look like? It might be akin to "capabilities-based planning" *as it was originally conceived* by senior DoD leaders. This approach emphasizes developing capabilities adequate (or as adequate as feasible given a budget) to deal with the range of possible conflicts *and* the range of ways that they can unfold, rather than fine-tuning for some best-estimate scenario. This requires hedging in various ways about what may be needed. Doing so has paid off historically, as illustrated in the cases above (e.g., when Saddam Hussein invaded Kuwait, despite that being regarded as quite unlikely, when U.S. forces were able to engage the Taliban deep in Afghanistan despite that not having been contemplated, or when – quite frequently over the years – U.S. Marines and naval battle groups have responded to diverse crises). Capabilities-based planning was a major thrust of the changes to defence planning introduced by Donald Rumsfeld in 2001 (Henry 2005). Unfortunately, implementation has sometimes distorted intent and buried uncertainty in ways that may be organizationally convenient but that are strategically destructive, as described in a Congressionally mandated study (Davis 2016). The term capabilities based planning now has very different connotations (both positive and negative), as reviewed elsewhere.[10]

It may be well to end this paper by noting that the long-term sustainability of the move toward addressing uncertainty by planning for FARness will be enhanced as the ideas are taken up, with one or another terminology, by academic scholars in more domains. It is already evident in work in some university groups, especially those doing interdisciplinary work to inform social policy decisions (Lempert *et al.* 2003, Haasnoot *et al.*, 2013), in the business literature on strategic planning (Quinn 1980, Mintzberg and Lampel 1999, Pascale 1999, March 2008), and in some of the organizational

performance literature (Light 2004). On the one hand, such planning for FARness seems like nothing more than common sense. In reality, however, it is not natural for large complex organizations. Further, the analytic methods for doing are nontrivial and not yet broadly familiar.

Notes

1. (See Grimes 2008, 8). Other agencies have sought to emulate DoD's PPBE. For related discussion (see Tama 2018a, 2018b) and the larger special issue in which the paper appears. Official description of the PPBE can be found on the website of the Defense Acquisition University, http://acqnotes.com/acqnote/acquisitions/ppbe-overview.
2. A recent official history (Keefer 2017, 323–349) provides support for much of this case.
3. The "Wolfowitz report," *Capabilities for Limited Contingencies in the Persian Gulf*, was a study by the DoD's Office of Program Analysis and Evaluation. Reportedly declassified in 2013 (Gunzinger 2011), it does not seem to be publicly available on the Internet.
4. Major players included Robert Komer, the Under Secretary of Defence for Policy; Russell Murray, the Assistant Secretary for Program Analysis and Evaluation; and David Jones, the Chairman of the Joint Chiefs of Staff David Jones. The NSC Staff was also much involved.
5. The recapitalization focus is evident in U.S. General Accounting Office (1995). The preference for continuity (but with adequate funding) was evident in reactions of most senior DoD leaders who were briefed in a 1996 meeting on strategic options (Davis *et al.* 1997). A few of the leaders, however, exhibited much more interest in change.
6. Proponents for change included Andrew Marshall's Office of Net Assessment (Krepinevich 2002), the Defense Science Board (Defense Science Board 1998, Defense Science, 1996), the National Research Council (National Research Council 2000, National Research Council 1997), and such leaders in the Joint Staff as Admiral William Owens (Vice Chairman) (Owens and Offley 2000) and Vice Admiral Arthur Cebrowski (Cebrowski and Garstka 1998). Non-government studies also contributed (Frostic *et al.* 1993, Davis 1994, Davis *et al.*, 1998, Arquilla and Ronfeldt 1996, Davis *et al.* 1996, Ochmanek *et al.*, 1998, Hundley 1999).
7. Private communications with Under Secretaries of Defense and other officials in the mid-to-late 1990s. It seemed to them that everything worthwhile was being accomplished outside the mainstream processes (the PPBE, acquisition process, and that of the Joint Requirements Oversight Council).
8. This included large studies reviewing implications of the social-science literature for thinking about counterterrorism (Davis and Cragin 2009) and intervention operations (Davis 2011, Wong *et al.*, 2017).
9. A more formal definition is that deep uncertainty is "the condition in which analysts do not know or the parties to a decision cannot agree upon (1) the appropriate models to describe interactions among a system's variables, (2) the probability distributions to represent uncertainty about key parameters in the models, and/or how to value the desirability of alternative outcomes" (Lempert *et al.* 2003). The ideas have been developed for more than two decades at this point (Davis 1994, Lempert *et al.* 2003, Walker *et al.*, 2013, Haasnoot *et al.*, 2013). For links to many publications, see the website on robust decisionmaking http://www.rand.org/topics/robust-decision-making.html.
10. A history of capabilities-based planning, including criticisms and counters, appears in an appendix of a larger report (Davis 2014).

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