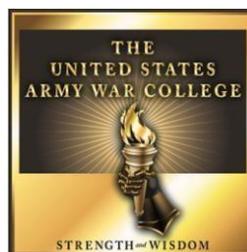


A Case for New Military Doctrine: Strategic Art and Design

by

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Abstract

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A Case for New Military Doctrine: Strategic Art and Design

There is an intellectual no-man's land where military and political problems meet. We have no tradition of systematic study in this area and thus few intensively prepared experts.

—Bernard Brodie¹

Strategic war planners at combatant commands often work to develop military advice for national-level strategy on wicked problems with undetermined political objectives. The strategic wicked problems are extremely complex with multiple actors, many strategic variables, and no apparent solution. Political objectives are understandably undetermined as they may depend on the military's assessment of military options.² However, traditional military planning doctrine and methodology treat political objectives as prerequisites for planning and as a measure from which to perform course-of-action comparison.³ Military strategists' assessments of military options for strategic wicked problems require broader strategic thinking, specifically Strategic Art and Design for national-level strategy, with more consideration for all elements of national power.

When senior military leaders task military strategists to determine and evaluate military options to deal with strategic wicked problems, significant challenges become evident. First, the apparent military options often logically worked toward distinctly different national and military objectives, complicating their comparison. Second, the need to reach consensus with U.S. interagency planners, and at times, hundreds of coalition planners complicates tight timelines. Third, competing narratives on strategic options often talk past one another as variables and risk-benefit estimations of the strategic environment remain ill defined. Fourth, the complexity of the strategic environment requires rapid synthesis of tremendous volumes of relevant theory in order

to accelerate the identification of salient points of disagreement for further analysis. Fifth, unknowns and low confidence in key assumptions complicate estimations of perceived risks and benefits of each strategic option. Sixth, once strategists reach a consensus on recommended strategic options, they experience difficulty building a concise narrative that describes the relative evaluation of the strategic options' with different objectives, assumptions, risks, and benefits. Finally, doctrine and training on Operational Art and Design often misguide the required strategic thought processes with over-simplistic approaches, models, and methods.

U.S. military strategists lack the doctrinal guidance for Strategic Design, and the Chairman of the Joint Chiefs of Staff's (CJCS) Joint Publication (JP) 5-0, *Joint Planning*, only briefly describes Strategic Art as achieving an understanding of strategic variables. Doctrine on Operational Art and Design is insufficient for strategic wicked problems for several reasons, but primarily because the first principal of joint operational planning is the focus on end states--end states that are unknown because the policy is undetermined.⁴ Thus, joint doctrine must improve to enable strategists to deliver better military advice to combatant commanders (CCDRs) and policymakers vis-à-vis strategic wicked problems with undetermined or dynamic political objectives.

This research proposes examples of doctrinal guidance on Strategic Art and Design for the CJCS's JP 5-0. The models and methodology serve several purposes. First, they facilitate strategists' synthesis of relevant theory on strategy, psychology, international relations, and war. While not overly prescriptive, models and methods assist strategists in asking the right questions to understand the strategic environment. Second, the models and methodology facilitate identification of the most advantageous

strategic options, and provide an organized method to compare the overall risks and benefits of the varying strategic options relative to one another. Third, the models and methodology allow for comparison of strategic options with varying military end states, and risks, while highlighting critical unknowns. Fourth, they provide for military strategists' recommendations on strategic options that leverage whole-of-government and coalition instruments of power in lieu of or in combination with military action. Finally, the models and methodology provide a concise means for military strategists to communicate evidence in support of recommendations to senior military leaders and civilian decision makers. This research project proposes the models and methods only as potential starting points from which other strategists working strategic wicked problems can develop their own personal models, or further evolve these, to strengthen Strategic Art and Design doctrine.

Key Definitions

For the purposes of this research project, "wicked problems" are as defined by Horst W.J. Rittel and Melvin M. Webber in their 1973 article in *Policy Sciences*.⁵ They distinguish wicked problems from ordinary problems, noting wicked problems do not have a well-defined problem statement, stopping rule, or solutions that can be objectively evaluated or measured for effectiveness. They do not offer opportunities to learn by trial and error, have an exhaustively describable set of potential solutions and operations, or have accurate historical analogies. Wicked problems are symptoms of other entwined problems with different root causes and various stakeholders can explain them in numerous ways. Finally, actors involved in wicked problems hold one another accountable for their actions. While wicked problems are not necessarily

restricted to any level of strategy, the focus of this research is strategic wicked problems at the level of national strategy.

To understand the process of strategy development for strategic wicked problems, strategists must begin by defining "strategy." In his 2005 book *Pure Strategy*, Everett Dolman clearly describes how a plan is not necessarily strategy, but strategy is a plan.⁶ Likewise, he states decision making is not necessarily strategy, but strategy (development) is decision making.⁷ In the military, strategy exists at multiple levels of command. Accordingly, at its most fundamental level, strategy is the resultant plan from complicated decision making in pursuit of some purpose defined by higher-level strategies or established strategic goals.

Carl von Clausewitz focused on strategy within the military instrument of power and defined strategy as the use of engagements for the object of war.⁸ Similarly, Antoine-Henri Jomini narrowly defined strategy as the art of making war on a map.⁹ Helmuth Graf von Moltke defined strategy as the application of knowledge in the development of an original idea in accordance with changing circumstances.¹⁰ Colin Gray defined strategy as the bridge that links military power to political purpose.¹¹ Finally, Thomas Schelling defined strategy as the use of potential force to achieve political purpose.¹² Fifty years ago, military theorist B.H. Liddell Hart provided definitions of grand and military strategy still commonly accepted today:

[Strategy is] the *art* of distributing and applying military means to fulfill the ends of policy...Grand strategy is [the coordination and direction of] all the resources of a nation, or band of nations, toward the attainment of the political object of the war – the goal defined by fundamental policy...[Grand strategy] should take account of and apply the power of financial pressure, of diplomatic pressure, of commercial pressure, and not least of ethical pressure, to weaken the opponent's will.¹³

This research project, with focus on national-level strategy, works from Hart's more holistic definition of "Grand Strategy," but uses the term "National Strategy."

Williamson Murray and Everett Dolman effectively capture the iterative and continuing character of strategy. In his introduction to *The Making of Strategy*, Murray argued the art of strategy is a process of "constant adaptation to shifting conditions and circumstances in a world where chance, uncertainty, and ambiguity dominate."¹⁴

Dolman defined strategy as a plan for attaining a continuing advantage.¹⁵ Given changing circumstances within the strategic environment, strategists must adjust the strategy and even, at times, abandon old strategy for new.¹⁶

The definitions of strategy provided above offer valuable insights into the character of strategy, but the theorists offer very little on how to develop sound strategy. Be it, art only, art and science, a bridge, or some other metaphor, contemporary strategists are naturally more interested in theory describing how to develop strategy. A common thread among Liddell Hart, Carl von Clausewitz, and other theorists is the acceptance of strategy as an art that is separate from science, because strategic calculations rely on the immeasurable capacity of human genius and will.¹⁷

Notwithstanding, a more relevant definition may be that of "strategy development." The definition of strategy development must acknowledge the fundamental attributes of sound strategy. The proposed definition of strategy development is the art and science of an iterative, complex decision-making process to produce a plan that manipulates ways to utilize means to achieve desired goals. During strategy development, strategists synthesize relevant history, experience, and theory to evaluate perceived threats and opportunities, and strategic options' risks and benefits,

all with respect to perceived limitations in the environment, and potentials of chance, deception, and non-rational action. This definition of strategy development maintains focus on the "art" and "ends/ways/means balancing" of strategy, while acknowledging the existence of scientific measures that can inform the "how" of its formulation (Figure 1).

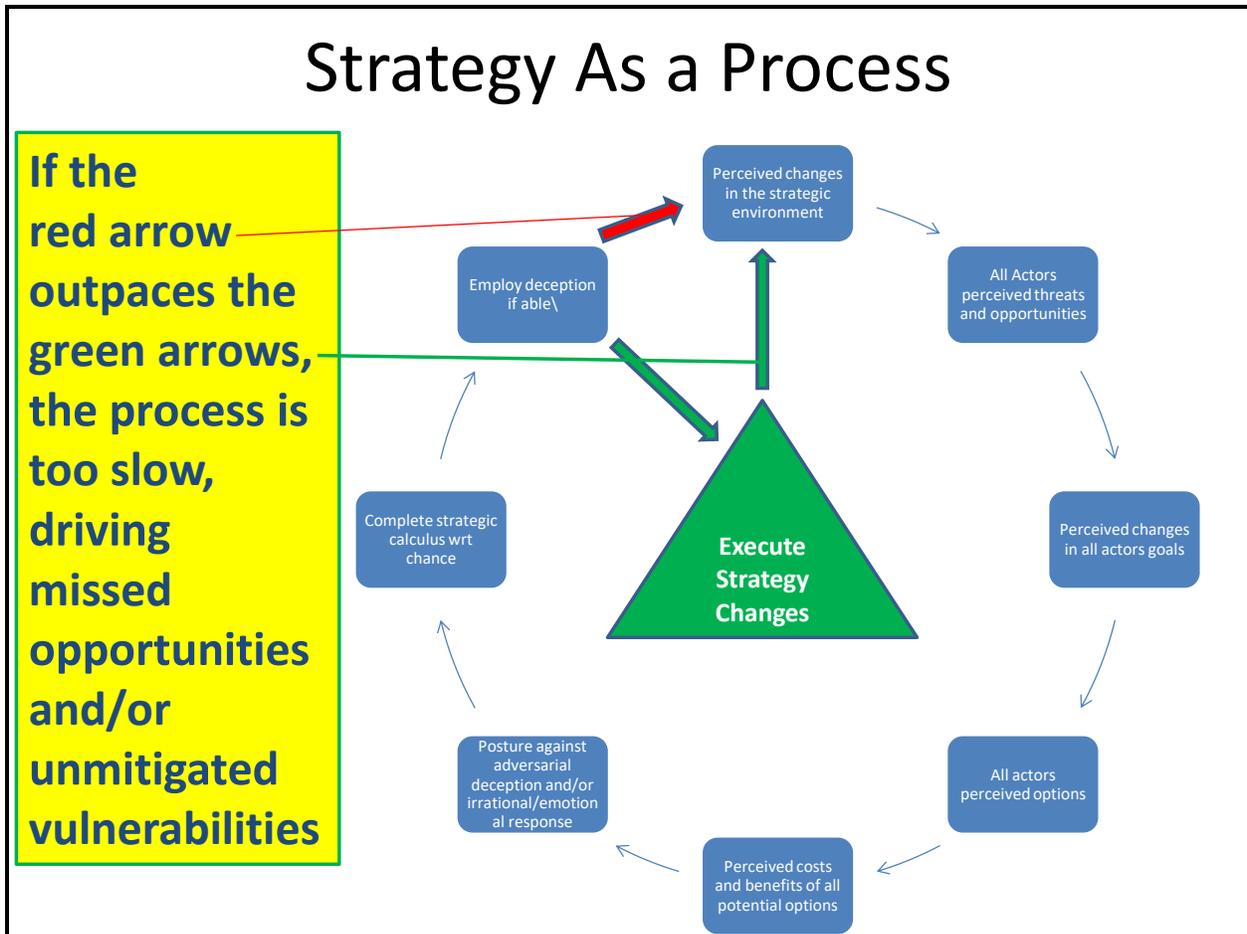


Figure 1. Strategy as a Process¹⁸

This research uses the terms, "Strategic Art" and "Strategic Design," to describe elements of national-level strategy development that are more like art and science, respectively. Military strategists, like strategists from other governmental agencies, must be able to provide sound military advice and recommendations on national-level

strategy, particularly for strategic wicked problems with options for military action. For sake of consistency, this research project will define Strategic Art and Strategic Design relative to JP 5-0 definitions of Operational Art and Operational Design. JP 5-0 defines Operational Art as: "the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, means, and risks."¹⁹ Strategic Art is also a cognitive approach informed by theory, experience, and history, but differs from Operations Art in that it focuses on national-level strategy, and develops strategic options with wider-ranging ends, ways, means, risks, and opportunities.

"Strategic Art" is the ability to synthesize experience, history, and large volumes of relevant theory to understand the strategic environment, and identify/evaluate whole-of-government strategic options for strategic wicked problems with undetermined or dynamic political objectives. Military strategists' capacity for Strategic Art is vital to inform CCDRs for dialogue with civilian decision-makers, whether time critical or within the Adaptive Planning and Execution process. While some elements of Operational Art are useful for national-level strategy, Strategic Art requires synthesis of a much larger breadth of theory, understanding of the strategic environment, and understanding of instruments of power outside the military.

Strategic Design differs from Operational Design more than Strategic Art differs from Operational Art. JP 5-0 describes Operational Design as:

the conception and construction of the framework that underpins a campaign or operation and its subsequent execution. The framework is built upon an iterative process that creates a shared understanding of the [Operational Environment (OE)]; identifies and frames problems within that

OE; and develops approaches, through the application of Operational Art, to resolving those problems, consistent with strategic guidance and/or policy.²⁰

Like Strategic Art, Strategic Design must analyze a broader range of military options that work in conjunction with other instruments of national power to achieve different objectives. Further, Operational Design frames operational approaches for a problem defined by strategic guidance, while Strategic Design frames military advice on national strategic options without clear strategic guidance. Because the products of Operational Design and Strategic Design are different, their processes, methodology, and frameworks are also necessarily different.

In his 2005 and fourth edition of his book, *How Designers Think; The Design Process Demystified*, Bryan Lawson provided foundational insight on design. He explained that design is both a noun and a verb, but the process and its practice are more important than the end result. Lawson explained how some types of design could develop common processes. He described the value of open-minded diverse groups in design to provide perspectives from different backgrounds and fields of study. Lawson also acknowledged that some designers find advantages approaching design in a systematic and mechanical way with visual models. Lawson explained how history and theory usually inform design, and that it is an iterative process. He stated that it is highly subjective, but also necessarily prescriptive in deriving best options. Lawson concludes that design definitions are highly variable and depend on the designers' backgrounds, fields of study, and the design's product.²¹

"Strategic Design," as a complimentary element of Strategic Art, is a compilation of iterative processes, models, and methodologies that facilitate an understanding of the strategic environment, and identification and evaluation of strategic options for national-

level strategy with undetermined or dynamic political objectives. Diverse strategy groups employ Strategic Design to analyze varying benefits and risks associated with strategic options across the conflict continuum in a systematic and organized manner.

"Planning Doctrine" described in this research is not prescriptive doctrine. It is not what Clausewitz calls positive doctrine, "a sort of manual for action."²² Rather, the term "doctrine" refers to only flexible planning guidance as described in JP 5-0: "This [2017] edition of JP 5-0 seeks to provide joint force commanders and their component commanders with processes that allow for that flexibility and the ability to plan and develop plans for an uncertain and challenging environment."²³ Accordingly, the proposed Strategic Art and Design doctrine is only intended to provide strategists with flexible guidance.

Providing Military Options for Strategic Wicked Problems

Several strategic theorists and scholars have documented military strategists' challenge in providing military options for strategic wicked problems. Bernard Brodie, Colin Gray, and Rosa Brooks have highlighted the civilian-military (civ-mil) chicken-and-egg problem, where the policy makers need military options to set policy while military strategists need political objectives to provide military options. Ultimately, only military strategists can resolve this problem by identifying, evaluating, and communicating military advice on *strategic* options that can inform and enable policymakers' decisions.

In 1959, Bernard Brodie, arguably the most respected American strategic theorist of the nuclear era, identified an "Intellectual No-Man's Land" in the "border area where military problems and political ones meet." He argued that the professional military officer, not service secretaries, members of Congress, or even the National Security Council, should develop military strategic thought. This military strategists' task requires

expertise well beyond that of their own profession, and close communication with experts across a broad range of fields. Brodie states that despite classification challenges associated with such communication, military strategists' systematic coordination must be the mover of change.²⁴

Forty years later, another well-known strategist, Colin Gray suggested the military strategists have yet to fill the 'intellectual no-man's land.' Gray described the same problem through a slightly different lens in his book, *Modern Strategy*, noting: "Although there are many kinds of grit that create friction in the relationship between politics and strategy, by far the most pernicious is an absence of appropriate political objectives. The defence planner, the strategist, and the military field commander are disarmed by the absence of clear political guidance."²⁵

Gray explained, to provide advice on strategic options, military strategists must understand all the dimensions of evolving conditions of war, and the complexity of the relationships among the dimensions.²⁶ He proposed that the expanding complexity of war has complicated the ability of policy to guide military strategy development.²⁷ Gray argued that complex strategic environments encourage vague policy, ephemeral political objectives, and limitations that prevent success. Gray emphasized that in such cases, the military professional's role is critical as she must speak truth to political power, and if unsuccessful, consider resignation.²⁸

Even more recently, Rosa Brooks confirmed that military strategists still struggle to provide military options without adequate policy. In her 2016 book, *How Everything Became War and the Military Became Everything: Tales from the Pentagon*, she shared her observations as Counselor to the Under Secretary of Defense for Policy.

She described how civilian decision-makers often requested military options without defined objectives, creating "the civilian-military version of the chicken-and-egg problem."²⁹ As an example, Brooks described an occasion when the White house wanted to be able to give the president a sense of his military options to address a potential humanitarian crisis in Sudan. However, without political and strategic direction from the White House on constraints, restraints, scale, and scope in monetary investment, troop numbers, and associated global opportunity costs, military personnel could not properly advise their civilian counterparts.³⁰

In 2017, Mark F. Cancian, from the Center for Strategic and International Studies, proposed the solution is military strategists with the requisite competencies to fill Brodie's intellectual no-man's land, overcome Gray's civ-mil barriers, and solve Brooks' civ-mil chicken-and-egg problem. He proposed that the U.S. military must more deliberately grow strategists that can provide solid military advice, and strategic options and analysis to senior military leaders for delivery to civilian decision-makers. Citing a 2016 Center for Naval Analyses study, Cancian stated military strategists' competencies should include qualitative, quantitative, and experimental analysis of patterns, trends, structure and outcomes program management, planning skills, rhetorical skills, and broad knowledge. He states, "With such high requirements, only a few military officers and [Department of Defense (DOD)] civilians actually have the aptitude, intellectual breadth, and talent to be good strategists." Cancian argues that the knowledge base required for sound strategy development is extensive and formal professional military education will be critical in growing military strategists.³¹

Cancian's solution aligns with Brodie's recommendation in 1959 for military professional officers to fill the intellectual no-man's land, but there is more to the solution than education. The U.S. military already invests heavily in formal military education designed to grow military strategists with a broad understanding of national-level strategy. Examples include the U.S. Army's Military Strategist (Functional Area 59) educational program, the Air Force's School of Advanced Air and Space Power Studies program (SAASS), and the School of Advance Military Studies (SAMS). The educational programs appropriately focus on national-level strategy, but doctrinal guidance to assist strategists in performing Strategic Art and Design is still largely absent. Without models and methods to sort through the vast amount of relevant history, theory and expertise that inform national-level strategy, military strategists' ability to perform Strategic Art and Design will continue to be limited. Further, military strategists must be able to build and lead coalition, interagency and joint strategy groups with the requisite backgrounds and expertise to perform Strategic Art and Design. While leading these groups, military strategists need Strategic Art and Design doctrine to gain an adequate understanding of the strategic environment, evaluate strategic options, and effectively communicate recommendations, even when civilian decision-makers have not yet set political objectives.

Current Joint Planning Doctrinal Guidance

Current joint planning doctrinal guidance acknowledges the problem Brooks calls the civ-mil chicken-and-egg problem, but does not provide Strategic Art and Design guidance to help strategists overcome the problem. As part of Operational Design, JP 5-0 mentions the need for the CCDR to collaborate with policymakers to provide military advice on strategic objectives that will lead to the military end states required for

Operational Art and Design.³² However, for wicked strategic problems, this "collaboration" is more than senior leader dialogue. The CCDR's military advice on strategic options is a tremendous and most important task for strategic wicked problems with undecided political objectives. This collaboration must be supported by military strategy teams, able to execute Strategic Art and Design in real time, and in coordination with interagency and coalition partners.

The Strategic Art and Design doctrinal shortcomings are largely due to a carryover of an outdated purist view of military advice, first prescribed by Samuel Huntington.³³ The purist view suggests that military advisors should confine their advice to civilian policymakers to only essential military aspects of the strategic environment. Today, civilian decision-maker requests for military options to address strategic wicked problems require a fusionist approach to military advice and military strategists well informed on the entire strategic environment.³⁴ The fusionist approach argues that in the strategic environment, purely military considerations never exist. Military considerations and military advice are necessarily interconnected with other instruments of power within the broader strategic environment.

Opposite guidance on Strategic Art and Design, JP 5-0 provides purist guidance, warning: "Strategic direction from strategic guidance documents can be vague, incomplete, outdated, or conflicting...When clarification does not occur, planners and commanders identify those areas as elements of risk."³⁵ Strategic Art and Design doctrine must provide the fusionist solution to this alarming approach to the civ-mil chicken-and-egg problem by providing the means by which military strategists can help

inform and generate policy for strategic wicked problems before Operational Design and Art commence.

JP 5-0 briefly describes the importance of understanding the strategic environment, but only provides three questions, a paragraph of other considerations, and a Political, Military, Economic, Social, Information, and Infrastructure (PMESII) model.³⁶ However, the critical underpinning theoretical considerations, like those provided by international relations theory, are entirely absent. After this incomplete, disjointed list of strategic environmental considerations, the JP 5-0 shifts responsibility for the rest of the task to military intelligence officers and their doctrine, JP 2-01.3.³⁷

According to JP 2-01.3, the intelligence community's Joint Intelligence Preparation of the Environment (JIPOE) "supports joint operation planning, execution, and assessment by identifying, analyzing, and assessing the adversary's [Centers of Gravity (COGs)], critical vulnerabilities, capabilities, decisive points, limitations, intentions, Courses of Action (COAs), and reactions to friendly operations based on a holistic view of the OE." However, for time-critical strategic wicked problems, much of the JIPOE products and analyses are largely "off the shelf", assembled prior to the crisis, and incomplete. Complicating matters, JIPOE analysis is conducted separate from the military strategists' planning event. Without guidance on Strategic Art and Design, strategists often over-rely on JIPOE products to identify and evaluate strategic options, especially when on short timelines.³⁸

JP 5-0 briefly mentions Strategic Art but does not provide the doctrinal guidance necessary to assist military strategists in understanding the strategic environment or evaluating strategic options. JP 5-0 defines Strategic Art as "the ability to understand

the strategic variables and to conceptualize how the desired objectives set forth in strategic-level guidance can be reached through the employment of military capabilities."³⁹ A better definition is: "Strategic Art" is the ability to synthesize experience, history, and large volumes of relevant theory to understand the strategic environment, and identify/evaluate whole-of-government strategic options for strategic wicked problems with undetermined or dynamic political objectives. JP 5-0's only other guidance on Strategic Art is an acknowledgment of the importance of understanding major international diplomatic, political and security challenges, the potential ways that the U.S. might employ its national means to attain desired ends, and how military operations can support and/or enable our national success.⁴⁰ Clearly, Strategic Art is much more than as described in current doctrine. As Operational Art doctrine assists planners at the operational level, joint planning doctrine should offer the same for Strategic Art.

Further complicating matters, the absence of Strategic Art and Design in joint planning doctrine sometimes leads strategists to employ elements of Operational Art and Design for national-level strategy. Strategists' use of Operational Art and Design for national-level strategy is problematic for several reasons. First, as mentioned above, doctrine on Operational Art and Design provides too little guidance on understanding the strategic environment. Second, Strategic Art and Design requires stronger consideration of a no-military-option course of action (status quo), likely exercising some measure of the other instruments of power. Operational Design assumes reasonable military options exist as part of its four components--develop a military operational approach. Strategic Art and Design doctrinal guidance must emphasize the

critical requirement for strategy groups to have sufficient breadth of expertise to estimate the effects of the other instruments of power on the strategic environment.

Third, Operational Art and Design neglect key aspects of estimated risks and benefits associated with assumptions. Current doctrine treats critical perceptual confidence intervals around assumptions in a binary manner. JP 5-0 defines assumptions as "A specific supposition of the operational environment that is assumed to be true, in the absence of positive proof, essential for the continuation of planning."⁴¹ Strategists list them and sometimes closely monitor them, but doctrine does not lead strategists to discuss or analyze the probabilities of assumptions being accurate, or the impact if false, in isolation or combination with other assumptions. Further, they are not specific to any specific strategic option, and probabilities of various assumptions being accurate will vary depending on the strategic option under consideration. Thus, particularly in developing strategic options for wicked problems, military strategists need new models and methodology to treat assumptions, and the benefits and risk they carry, more appropriately.

Fourth, without detailed analysis of estimated probabilities and impacts of strategic options' risks and benefits, strategists can miss critical unknowns that may derive Commander's Critical Information Requirements (CCIRs). Strategy groups must systematically discuss all critical estimations of probability and impact of each strategic option's perceived benefits and risks. The discoveries of differences of opinion are vital to information sharing, common understanding, and identification of critical unknowns.

Finally, Operational Art and Design lack strategic option evaluation guidance. Military options and strategic options are different and distinct. JP 5-0 describes military

options: “Joint planning identifies military options the President can integrate with other instruments of national power (diplomatic, economic, informational) to achieve those national objectives. In the process, joint planning identifies likely benefits, costs, and risks associated with proposed military options.”⁴² These military options are part of the normal Joint Planning Process (JPP). However, when policymakers have not clearly stated national objectives, military end states cannot be determined and the planning process, as defined in JP 5-0, breaks down. Specifically, the range from minimal to maximum military intervention usually drastically changes realistic military end states, assumptions, key tasks, and probabilities and magnitudes of benefits and risks. Moreover, declared military end states, even if just to coalition partners, carry significant political implications, particularly with defining success and failure of the operation. Rather than assuming a set of desired end states and continuing normal planning, military strategists should first develop *strategic options* to assist decision makers in policy decisions for the strategic wicked problem. Failure to do so likely wastes time and potentially implies support for a bad strategic option.

Appendix G of JP 5-0 provides models for COA comparison as part of the JPP, but they grossly oversimplify the task, especially when considered for strategic options. Evaluation criteria are incapable of effectively competing strategic options that progress toward different end states. Additionally, the criteria and COA scores lack necessary specificity in the weighting estimated impacts and probabilities of benefits and risks.

While not yet joint doctrine, the U.S. Army SAMS's *Art of Design, Student Text, Version 2.0* provides thorough guidance on Operational Art and Design.⁴³ Published in May 2010, the text offers models and methods to improve Operational Art and Design

with respect to a wider strategic environment.⁴⁴ Several models provided in its Appendix B also offer utility in Strategic Art and Design, but are largely focused on complex systems analysis theory or creative and critical thinking skills.⁴⁵ Other models, such as the "Positive, Minus, Interesting (PMI)" model and the "Comparison Matrix" model offer minimal utility to strategists at any level.⁴⁶ The PMI ignores probabilities associated with estimated benefits and costs, and the Comparison Matrix ignores risk altogether.⁴⁷ The list of "Design Questions" provided in *Art of Design*, Appendix D is useful in understanding the strategic environment, but lacks organization and international relations (and other) theory necessary for Strategic Art and Design.⁴⁸

Strategists need doctrinal guidance, including models and methodology, to assist them in supporting CCDRs, who provide critical military advice. A more systematic risk-benefit analysis, described below, offers a more accurate and measured approach to comparing strategic options with respect to both perceived benefits' and risks' probabilities of being realized and magnitudes of impact.

Required Strategic Art and Design Doctrine

Strategic Art and Design are complex, but many theorists have already accomplished much of the heavy lifting with many theories on strategy, war, governmental decision-making, sociology, political science, international relations, and psychology. Strategic wicked problems require new doctrinal guidance for Strategic Art and Design to assist strategy groups in synthesizing potentially relevant theory, understanding complex strategic environments, and evaluating strategic options.

Military strategists must have the ability to build interagency strategy development groups with the broad collective expertise required for Strategic Art and Design. JP 5-0 reiterates that military strategists must interact with "governmental and

nongovernmental agencies, multinational forces and other interorganizational partners" during strategy and plans development.⁴⁹ However, the doctrine must be expanded to ensure strategists working strategic wicked problems invite the appropriate agencies and organizations to strategy groups, and request higher headquarters' assistance when representation is insufficient.

This research project proposes two examples of models that doctrinal guidance on Strategic Art and Design might entail. The first is a theory-infused Rational Actor Model (RAM) with special attention to theory addressing bounded rationality. The RAM, as presented by Graham Allison and Philip Zelikow in their 1999 book, *Essence of Decision; Explaining the Cuban Missile Crisis*, is a model that logically frames how rational actors arrive at decisions. The core concepts of models of rational action are goals and objectives, alternatives, consequences and choice (Figure 2).⁵⁰ The first four steps of the RAM are mostly aligned with Strategic Art, assisting the strategist in asking the right questions to understand the strategic environment. For wicked problems, the last step of the RAM is extremely complex, requiring some methodologically to assist strategists attempting to compare strategic options (Strategic Design).

Strategic Art:

- What are the objective (or perceived) circumstances that the state conceives as threats and opportunities?
- What are the state's goals (survival, power)?
- What are the objective (or perceived) options for addressing this issue?
- What are the objective (or perceived) strategic costs and benefits of each option?

Strategic Design:

- What is the state's best choice given these conditions?

Figure 2. Allison and Zelikow's RAM⁵¹

The theory-infused Bounded Rational Actor Model (BRAM) is essentially a RAM with prompts to consider many theories on strategy, war, international relations, psychology, and perceptions at the appropriate step(s) of the RAM. The theory-infused BRAM is an example of a Strategic Art tool to help strategists consider and apply theory relevant to the strategic environment, understand the strategic variables, identify actors' strategic options, and evaluate actors' strategic options.

The BRAM has embedded theory on non-rational elements to consider, including accounting for emotional responses, ego psychology, deception, and understanding other actor's paradigms, perceptions, and interpretation of new information. Accordingly, the BRAM focuses on theory that informs an understanding the bounded rationality of actors within the strategic environment. In his 1947 book, *Administrative Behavior*, Herbert Simon explained, in contrast with comprehensive rationality, bounded rationality recognizes actors' inescapable limitations of knowledge and computational ability.⁵² Simon argued that while human and organizational behavior is at least "intendedly rational," misunderstandings of other actors' goals, information, perceptions of consequences of action, and emotions leads to perceptions of irrationality.⁵³

When a strategist approaches a problem using a RAM, existing paradigms, perceptions, and ways of interpreting information often generate ostensible threats, opportunities, goals, options, risks, benefits, and what appears to be a rational decision.⁵⁴ The repetitive use of the word "perceived" in the BRAM is critical to prompt strategists to address the non-rational nature of perceptual pitfalls within the RAM construct. While employing the model to identify and evaluate strategic options, the word "perceived" prompts strategy teams to reconsider the implication of all relevant

actors' paradigms, perceptions, and interpretations of information within the strategic environment in order to account for bounded rationality. Depending on the time available, the BRAM would guide strategists' analysis through all key actors' viewpoints before and after strategic option execution, and after perceived changes in the strategic environment (Figure 3).

<p>What do actors <i>perceive</i> as the problem(s), and their threats and opportunities?</p> <ul style="list-style-type: none"> Analyze actors' strategic paradigms and assumptions Analyze actors' <i>perceived</i> root causes of problems Actors' <i>perceived</i> physical, mental and moral centers of gravity Analyze actors' cultural, cognitive & ego psychology implications Actors' <i>perceived</i> prevalence of balance-of-power politics Actors' <i>perceived</i> threats and opportunities introduced by asymmetry, and new technologies, tactics, techniques and/or procedures across all domains Ability for actors to communicate and <i>perceived</i> potentials for deception Actors' ability to avoid of common misperception errors and groupthink
<p>What are each actor's stated/<i>perceived</i> goals?</p> <ul style="list-style-type: none"> Analyze actors' <i>perceived</i> grand strategy: orientation between survival/liberation/power realism and international/positive-sum liberalism Actors' <i>perceived</i> prioritization of goals Analyze actors' tendencies and potentials toward coercion or brute force
<p>What are each actor's <i>perceived</i> options (all IOP / domains) to address the problem(s)?</p> <ul style="list-style-type: none"> Analyze actors' <i>perceived</i> deterrent and response options across the conflict continuum Analyze actors' <i>perceived</i> legal, ethical and political limitations Analyze actors' <i>perceived</i> political, economic, infrastructure, informational, military, physical environ, and geopolitical implications Analyze actors' tendencies toward hybrid warfare Analyze actors' <i>perceived</i> limitations and implications imposed by WMD Analyze actors' <i>perceived</i> critical vulnerabilities, capabilities (means/ways), & decisive points Analyze actors' organizational behavior implications Analyze actors' governmental politics implications Analyze implications/<i>perceptions</i> of human nature, state structure, and international environ
<p>What are each actor's <i>perceived</i> strategic costs and benefits of each option?</p> <ul style="list-style-type: none"> Analyze <i>perceived</i> impact of actors' actions across all key strategic audiences Analyze economic principals to rationalize—<i>perceived</i> (un)sunk costs, global opportunity costs, contracts, information asymmetry, marginal returns, substitution Explore <i>perceived</i> potential for unexpected external actors' response (emotional/non-rational or unreasonable)
<p>What is each actor's <i>perceived</i> best choice given these conditions?</p> <ul style="list-style-type: none"> Consider actors' ability to guard against and leverage deception and salami tactics Analyze actors' <i>perceived</i> decision points, termination criteria, & de-escalatory off-ramps Consider missing information, decision (OODA) speed, and perception confidence intervals Analyze actors' decision calculus: relative to goals, compare strategic options' estimated benefits and costs (Consider SOCM)

Figure 3. A Theory-Infused Bounded Rational Actor Model (BRAM)⁵⁵

Another model, a Strategic Option Comparison Model (SOCM), can assist in accomplishing risk-benefit comparisons of strategic options as the final step of the BRAM. The underlying math of risk-benefit analysis is uncomfortably scientific to some strategists, but it is merely the simple mental calculus many critical thinkers perform when making complex decisions. In their 1999 *Yale Law Journal* article, "Rethinking risk-Benefit Analysis," Matthew Adler and Eric Posner argued that, if used correctly, risk-benefit analysis is accurate and not invalidated morality ignorance or utilitarian constraints.⁵⁶ As the preceding BRAM addresses these and many other elements of bounded rationality, the SOCM's risk-benefit analysis should be useful to strategists comparing strategic options if they carefully manage its methodology. Rather than providing a prescriptive solution, the SOCM facilitates strategy teams' identification of points of uncertainty or disagreement in estimations of risks and benefits' for further analysis or intelligence prioritization. However, at the end of each iterative SOCM cycle, the model should provide evidence to explain the consensus of the strategy group's recommended strategic options. Figure 4 illustrates the SOCM's underlying risk-benefit arithmetic.

$$V = \sum[O \cdot p(O)] - \sum[T \cdot p(T)]$$

where:

V = relative value for strategic option comparison

O = magnitude of impact of a potential opportunity with the strategic option

p(O) = probability of realizing the opportunity with the strategic option

T = magnitude of impact of a potential threat with the strategic option

p(T) = probability of realizing the threat with the strategic option

$\sum[O \cdot p(O)]$ = estimated overall benefit of the strategic option

$\sum[T \cdot p(T)]$ = estimated overall risk of the strategic option

Figure 4. SOCM Risk-Benefit Arithmetic⁵⁷

Finally, when recommending strategic options to senior military leaders and civilian decision-makers, military strategists must clearly communicate the probabilities of achieving desired end states and of various benefits and costs (risks) associated with each option. The BRAM can assist military strategists in evaluation of the strategic environment and identification of strategic options. The SOCM offers utility in clearly presenting strategists' estimations of strategic options' relative value based on varying perceived benefits and risks. The SOCM, as a sub-model to the BRAM's last step, can assist military strategists in a comparison of strategic options and communication of recommended military advice (Figure 5).

strategic options to military leaders. Current military doctrine on Operational Art and Design is insufficient to assist strategists in accomplishing these tasks.

The definitions and explanations of Strategic Art and Design above, the theory-infused Bounded Rationality Actor Model and the Strategic Option Comparison Model are all examples of a new doctrine that should be afforded to strategists building national-level strategy for wicked problems (Figures 3 and 5). Strategic Art and Design doctrine must assist strategists in managing large confidence intervals around estimations of probabilities and impacts of perceived risks and benefits. Additionally, the doctrine must assist strategists in managing perceived irrationality, including all actors' paradigms, perceptions, and interpretation of new information, potentials for adversarial deception, and actors' emotional responses.

Strategic Art and Design doctrine must assist strategists in managing strategy's temporal dimension (Figure 1). Strategists must develop strategy very quickly for some crises, and adjust the strategy with changes to the strategic environment and receipt of new information. Strategic option execution must occur before strategic environment changes or the actor realizes missed opportunity or unexpected risks (the adversary's objective). The examples of Strategic Art and Design should help strategists produce sound strategy, founded in credible theory, and with more speed and agility than that of an adversary.

Recommended future research is critical to the evolution of useful Strategic Art and Design doctrinal guidance. Future research should explore the explanatory and prescriptive utilities of the definitions, explanations, and models presented above.

The Joint Staff J5 should consider expanding their doctrinal guidance, methods and tools on Strategic Art to include example models, like the BRAM, to help strategists quickly analyze the strategic environment and synthesize theory in order to identify and analyze strategic options. They should also consider adding doctrinal guidance, methods, and tools on Strategic Design, including example models, like the Strategic Option Evaluation Model. Such tools are a starting point to assist strategists in quickly and effectively evaluating strategic options and communicating recommendations.

Similarly, the Joint Staff J5 should consider making more clear the distinction between military strategists and planners. As long as the JP addresses the formulation of strategy, the title of JP 5-0 should be changed to "Joint Strategy and Plans." Currently, JP 5-0 does not currently use the word "strategists," however as described in this research, CCDR's J5 strategy teams are performing as strategists. While the same individuals will likely perform both functions in different efforts, the distinction is important, as identified in the distinction between Strategic and Operational Art and Design.

Additionally, the Joint Staff J5 should consider refining other doctrine within JP 5-0. As described above, management of assumptions and risk in the JPP needs adjusted. JP 5-0 must capture all assumptions that evolution of the OE may prove invalid as risk. Further, strategists and planners must carefully analyze all risks as the product of their respective magnitudes of impact and probabilities. Finally, doctrinal guidance should describe the inclusion of external entities in joint and combined planning functions as "crucial to understanding the strategic environment." Additionally,

JP 5-0 should emphasize time and resource management as priority challenges when providing military advice on strategic wicked problems.

New Strategic Art and Design doctrinal guidance is required to arm military strategists with the tools and methods to identify and evaluate strategic options for strategic wicked problems without established political objectives. Without such tools and methodology, military strategists will likely remain outside Bernard Brodie's "intellectual no-man's land."

Endnotes

¹ Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959), iii.

² Robert E. Osgood, *Limited War: The Challenge to American Strategy* (Chicago: University of Chicago, 1957), 14.

³ U.S. Joint Chiefs of Staff, *Joint Planning*, Joint Publication 5-0 (Washington, DC: U.S. Joint Chiefs of Staff, June 16, 2017), I-2, www.ics.mil/Portals/36/Documents/Doctrine/pubs/jp5_0_20171606.pdf (accessed February 26, 2018).

⁴ U.S. JCS, *Joint Planning*, JP 5-0, I-2.

⁵ Horst W.J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973): 155-69.

⁶ Everett C. Dolman, *Pure Strategy* (New York: Frank Cass, 2005), 11.

⁷ *Ibid.*, 13.

⁸ *Ibid.*, 18.

⁹ *Ibid.*, 19.

¹⁰ *Ibid.*

¹¹ *Ibid.*, 21.

¹² *Ibid.*

¹³ B.H. Liddell Hart, *Strategy*, 2nd revised ed. (New York: Penguin, 1991), 322.

¹⁴ Williamson Murray, Richard Hart Sinnreich, and James Lacey, eds. *The Shaping of Grand Strategy: Policy, Diplomacy, and War* (Cambridge: Cambridge University Press, 2011), 8.

¹⁵ Dolman, *Pure Strategy*, 11, 15, 27.

¹⁶ *Ibid.*, 11.

¹⁷ Hart, *Strategy*, 323.

¹⁸ This model of strategy as a process is my own creation. It draws from the fundamental elements of the Rational Actor Model, as described by Graham Allison and Philip Zelikow in *Essence of Decision*, but also incorporates the element of deception as described by Sun Tzu and the temporal observe-orient-decide-act (OODA) loop implications as described by John Boyd.

¹⁹ U.S. JCS, *Joint Planning*, JP 5-0, IV-1.

²⁰ *Ibid.*

²¹ Bryan Lawson, *How Designers Think; The Design Process Demystified*, 4th ed. (New York: Architectural Press, 2005), 14, 1-15, 31, 55, 123-5, 242.

²² Carl Clausewitz, *On War*, trans. and ed. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 141.

²³ Kevin D. Scott, Vice Admiral, USN, Director, Joint Force Development, "Letter for the Chairman of the Joint Chiefs of Staff," after title page of U.S. JCS, *Joint Planning*, JP 5-0.

²⁴ Bernard Brodie, *Strategy in the Missile Age* (Princeton: Princeton University Press, 1959), 7-8; Colin S. Gray, *Modern Strategy* (New York: Oxford University Press, 1993), 7-11.

²⁵ Gray, *Modern Strategy*, 57.

²⁶ *Ibid.*, 52.

²⁷ *Ibid.*, 4-5.

²⁸ *Ibid.*, 44-45.

²⁹ Rosa Brooks, *How Everything Became War and the Military Became Everything: Tales from the Pentagon* (New York: Simon & Schuster, 2016), 310.

³⁰ *Ibid.*

³¹ Mark F. Cancian, et al., "Formulating National Security Strategy: Past Experience and Future Choices" (Washington, DC: Center for Strategic and International Studies, 2017), 154-55, www.csis.org/analysis/formulating-national-security-strategy (accessed October 20, 2017); Margaret M. Polski, "Strategy 2.0: The Next Generation," *Joint Forces Quarterly* 81 (2nd Quarter 2016): 23.

³² U.S. JCS, *Joint Planning*, JP 5-0, IV-8.

³³ Amos A. Jordan et al., "The Role of the Military," *The Policy Process, in American National Security*, 6th ed. (Baltimore: The Johns Hopkins University Press, 2009), 185-86.

³⁴ Ibid.

³⁵ U.S. JCS, *Joint Planning*, JP 5-0, IV-8.

³⁶ Ibid., IV-9.

³⁷ Ibid.

³⁸ U.S. Joint Chiefs of Staff, *Joint Intelligence Preparation of the Operational Environment*, Joint Publication 2-01.3 (Washington, DC: U.S. Joint Chiefs of Staff, May 21, 2014), IV-13, <https://fas.org/irp/doddir/dod/jp2-01-3.pdf> (accessed February 26, 2018).

³⁹ U.S. JCS, *Joint Planning*, JP 5-0, I-5, xiii.

⁴⁰ Ibid.

⁴¹ Ibid., GL-5.

⁴² Ibid., I-1.

⁴³ School of Advanced Military Studies, *Art of Design, Student Text, Version 2.0*, http://www.au.af.mil/au/awc/awcgate/sam/art_of_design_v2.pdf (accessed November 27, 2017).

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ U.S. JCS, *Joint Planning*, JP 5-0, i, xiv, xvi, xxx, I-2, I-3, I-6, I-11.

⁵⁰ Graham T. Allison and Philip Zelikow. *Essence of Decision: Explaining the Cuban Missile Crisis*. (New York: Longman, 1999), 18.

⁵¹ Ibid., 389-90.

⁵² Herbert Simon, *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations*, 4th ed. (New York: The Free Press, 1997), 88.

⁵³ Ibid.

⁵⁴ Allison and Zelikow, *Essence of Decision*, 4.

⁵⁵ This BRAM is an abbreviated version of a larger model I built with all synthesized theory footnoted within the model. The full BRAM will likely be available as part of another research project and in the interim is available upon request.

⁵⁶ Matthew D. Adler and Eric A. Posner, "Rethinking Cost-Benefit Analysis," *The Yale Law Journal* 109, no. 2 (1999): 165–247.

⁵⁷ Robert Pape, *Bombing to Win* (New York: Cornell University Press, 1996), 16; Michael Mazarr, "Rethinking Risk in Defense," April 13, 2015, linked from *War on the Rocks Home Page*, <https://warontherocks.com/2015/04/rethinking-risk-in-defense/> (accessed November 14, 2017).