

How to Assess the Will to Fight

A Roadmap for Building Institutional Capacity

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This primer is intended to help U.S. and allied government leaders and analysts select and apply a methodology to assess the will to fight of adversary, partner, and allied military forces.

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EXECUTIVE SUMMARY

This primer contains a roadmap for defense, intelligence, and diplomatic institutions to build a will-to-fight assessment program to address clearly articulated gaps in the ability to understand and forecast human behavior in war.

Will to fight is, arguably, the most important factor in war. But little effort has been put towards forecasting will to fight for military and political decisionmaking. Failures to accurately assess will to fight in the Vietnam War, in Iraq in the 2010s, and most recently in Afghanistan and Ukraine, have contributed to strategic setbacks or failures. Absent structured assessment, the subjective judgments about human behavior in war are often wrong.

Significant improvement is possible. While will to fight cannot be precisely measured, it can be more effectively and accurately assessed and forecasted. Institutional programs can be developed with relatively minimal resource investments, and by training analysts in ways that will broadly improve their knowledge and capabilities.

Decades of research by military psychologists, historians, cultural anthropologists, cognitive modelers, neurologists, and other experts offer a rich menu of options to develop an effective will-to-fight assessment program. However, building a structured program centered on will to fight is a groundbreaking step; there are no clear antecedents. Getting this right requires a methodical first-principles approach. I recommend building a program in five phases with seven implementation steps:

Phase 1. Agree on a working definition of *will to fight* as a basis for implementation.

Phase 2. Select levels of assessment needed from military units to national leaders.

Phase 3. Select a general assessment theory to shape program investments.

Phase 4. Design the program and apply resources in seven steps:



Phase 5. Sustain the program and apply an iterative learning process.

Expectations for success should be firmly set and thoughtfully conveyed. All efforts to understand and forecast human behavior are necessarily uncertain. Assessing will to fight requires the same kind of estimative approach applied to any other analytic challenge: Problems are defined, information is gathered, methods are applied, judgments are rendered.

Institutional objectives should be to significantly reduce uncertainty while transparently conveying inherent complexity. Consumers of will-to-fight assessments will need to set their own expectations, educate themselves on the fundamentals, and provide institutions with the resources they need to succeed.

Introduction

In the wake of military disasters, senior political and military leaders often lament the failure to successfully forecast human behavior. Here are some relevant quotes:

In 1971, when it became clear that the United States was heading for defeat in Vietnam, former Secretary of State Dean Rusk said, "I personally underestimated the resistance and determination of the North Vietnamese."¹

After the U.S.-built Iraqi Army collapsed in 2014, then Director of National Intelligence James Clapper said, "What we didn't do was predict the will to fight...I didn't see the collapse of the Iraqi security force in the north coming....It boils down to the will to fight, which is an imponderable."²

After the United States failed to forecast the speed of the collapse of Afghan security forces in 2021, Secretary of Defense Lloyd Austin said, "The fact that the Afghan army that we and our partners trained simply melted away...took us all by surprise."³

After the Ukrainians surprised the world by fighting back aggressively against the Russians in 2022, DIA Director LTG Scott Berrier said, "I think assessing will, morale, and the will to fight is a very difficult analytic task."⁴

Since the Afghanistan and Ukraine surprises, Senators Tom Cotton and Angus King have been particularly adamant that the U.S. government do a better job assessing will to fight. King stated, "I am not naïve enough to think that this is easy or straightforward. What I do believe is it's damned important and that we have to do a better job."⁵ Elements within the Intelligence Community are already exploring options to improve will-to-fight forecasting, and Congress may soon compel the Department of Defense to develop complementary methods.⁶

This primer is intended to help those within the U.S. and allied governments select and apply effective methods for assessing will to fight. As King argues, this is neither an easy nor straightforward task. There are good reasons American analysts have done poorly thus far. Americans have no agreed-upon definition of will to fight or related terms like *morale*. Understanding and forecasting human behavior is extraordinarily difficult, even for the world's top academic minds. No experts have successfully merged assessments of will to fight and military materiel to produce good estimates of *combat effectiveness*, another important but undefined term.

Anyone seeking to resolve these problems needs to go forward expecting to be periodically confounded and overwhelmed by complexity. Those seeking easy solutions are likely to fail. However, it *is* possible to effectively assess will to fight.

Taking a Structured Institutional Approach to Assessing Will to Fight: 5 Phases

I wrote this primer with the intent of helping institutions like intelligence and defense agencies build a comprehensive program to assess the will to fight of adversaries, partners, and allies. I recommend five sequential phases to achieve the best results:

- (1) Agree on government-wide **definitions** of key terms, including *will to fight*.
- (2) Select **level(s)** of assessment: Military forces, state leaders, both, or more?
- (3) Select an assessment **theory**: Determine the best approach for the institution.
- (4) Select and apply **methods** and **resources**: seek effective, efficient means.
- (5) **Sustain** and **revise** the process: Keep a baseline, experiment, and **learn**.

People have been assessing will to fight since the first instance of human-on-human combat. But thus far, most assessments have been almost entirely subjective. Informed by often scattershot and questionable information, leaders and analysts *feel* that a foe or ally will or will not fight and then base sometimes existential strategic decisions on these feelings. History is littered with examples of failed seat-of-the-pants assessments of human will; Vietnam, Iraq, Afghanistan, and Ukraine are only some of the most recent examples.⁷

Therefore, arguably, any effort to institutionalize this process will be novel. If anyone has previously tried to institutionalize will-to-fight assessment to this extent, their efforts have gone unsung.⁸ As with any brand new institutional process, leaders must set reasonable expectations for success. Human behavior forecasting is unavoidably difficult. This will be a gradual process that will probably only achieve relative, incremental improvements, not great leaps. Phase 5—Sustaining and Learning—is essential to success.

Organization of the Primer

(1) Discussion of key challenges; (2) Selecting level(s) of assessment; (3) Agreeing on definitions; (4) Selecting a theory; (5) Building a program; (6) Sustaining and learning; (7) Thoughts on applying this process to the *will to act* in great power competition.

Key Challenges

Consumer expectations and biases will have to be considered in the earliest stages of program development. While there is presently a high demand for better will-to-fight assessment, there may also be a limited understanding of, and willingness to absorb the depth of complexity inherent in describing human will. As I describe below, the approach most likely to be accurate is also the hardest to convey through a one-pager or single slide or bullet. But compromising thoroughness and detail to spare policymaker patience will almost assuredly result in higher failure rates. I address possible remedies.

No matter which approach is selected, it will have the greatest chance of success if it is applied as an *evidence-driven, transparent* process driven by *structured analytic techniques*. The more complex and uncertain the problem—in this case, describing and forecasting human behavior in the chaos of war—the more behind-the-scenes structure is needed to build accuracy and to give policymakers confidence in the assessments. The best guides already exist in Intelligence Community Directives (ICDs) 203 and 206, and in books like *Structured Analytic Techniques for Intelligence Analysis* and *A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis*.⁹

Will to fight can be assessed but not scientifically measured. Quantitative evidence should be collected to help feed assessments of will to fight, but human will is not amenable to a process centered on quantitative measurement.¹⁰ Analysts and policymakers should avoid terms like “measure” and “metrics” when establishing will-to-fight assessment capabilities, and while conducting and reviewing assessments.

This is not decided science. As of mid-2022, and probably for the foreseeable future, a fixed solution to the problem of understanding and forecasting will to fight is and will be elusive. Therefore, it is imperative that institutional managers treat this as a challenge requiring competing viewpoints, focused experimentation, and healthy debate.

PHASE 1: Agreeing on Definitions

As of late-2022, there is no shared definition of *will to fight* in the U.S. government, or specifically of **military will to fight**, which would apply to a military unit or organization. At least across the U.S. government, undefined problems are difficult to program against, so the first step in solving the will-to-fight assessment challenge is to define terms.¹¹ In 2018, my RAND team proposed a definition of military will to fight:

Military will to fight is the disposition and decision to fight, act, or persevere as needed.

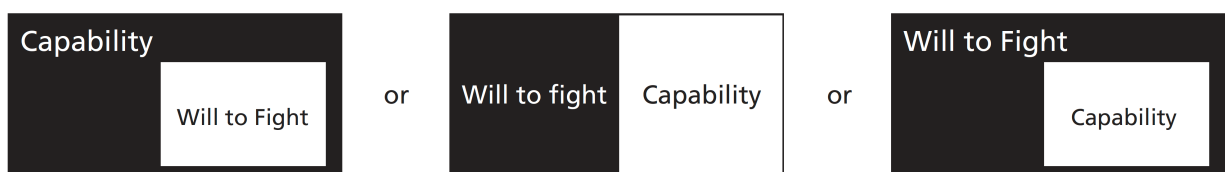
Each word in this definition has specific meaning. *Disposition* is used to frame will to fight in terms of intelligence forecasting: We can apply resources to better understand what people are likely to do in a given circumstance. *Decision* describes will to fight as a process of agentic choice (see theories, below), a step that will later dictate methods and data collection. The words *fight, act, or persevere* ensure that will to fight can be applied to military units not explicitly fighting (e.g., truck drivers, drone operators, or people sitting in trenches waiting to fight). *As needed* casts a wide net for any military circumstance, also condensing the definition to make it more digestible.

National will to fight describes the will of key state decisionmakers to continue to fight during a war rather than succumb to pressures to quit or accept unsatisfactory terms.¹² Both military and national will to fight can be assessed in parallel, and one informs the other both for assessment and forecasting. In 2018 the RAND research team focused on will-to-fight assessment offered this definition:

National will to fight is the determination of a national government to conduct sustained military and other operations for some objective even when the expectation of success decreases or the need for significant political, economic, and military sacrifices increases.

Combat effectiveness (or **combat power**) is an equally important term that remains undefined for the U.S. government. Generally, combat effectiveness is understood to be *the likelihood that a military unit or organization will win a given fight*.¹³ While will to fight is often described as the single most important factor in war, materiel like aircraft, drones, tanks, trucks precision munitions, boots, and rifles also play an essential role in military success. Ideally, will-to-fight assessments will be integrated with assessments of physical capabilities to generate a holistic assessment of combat effectiveness, or a similar term. Until will-to-fight assessment is better structured, we cannot know the degree to which human will, human capabilities like fitness and training, and materiel come together to generate effectiveness. Figure 1 depicts this uncertainty:

Figure 1: Uncertainty in the Combat Effectiveness Assessment Balance



Associated terms like *morale, cohesion, spirit, resilience, and aggression*, are also poorly defined and not generally agreed upon. They cannot be ignored, but they

should not distract from the focus on will to fight.¹⁴ Defense institutions should consider defining these terms explicitly to help contextualize will to fight.

PHASE 2: Selecting Level(s) of Assessment

Each institution has different responsibilities and interests, allowing for tailored program focus. For example, a service-level military intelligence center might focus on the military will to fight of adversary military services and specific adversary and partner units, while a national intelligence (intel) agency might focus on political and senior-military decisionmaking and military organizations. Some redundancy across institutions is essential to provide policymakers with alternative forecasts.

Table 1, below, depicts notional levels of assessment focus for different types of institutions.

Table 1: Levels of Assessment Matched to Institution Type

	Service-level intel center	National defense institution	National intel institution	National diplomatic institution
Adversary unit	✓			
Adversary org.	✓	✓	✓	
Partner org. and units	✓	✓	✓	✓
State decisionmakers			✓	✓

Selecting the right level of assessment at the outset of the programming process will help target resources and reduce waste over time.

PHASE 3: Selecting a Theory of Behavior and Assessment

Absent a definitive, proven, universal approach to assess will to fight, managers will have to select a theory of behavior and assessment that best fits their desired outcomes and institutional capabilities. This is a crucial process because it dictates the important tradeoffs that will emerge in the subsequent phases of program development. *Skipping a serious and thoughtful institutional debate over the theory of assessment can derail the whole process.*

Assuming seat-of-the-pants guessing is out, my research suggests that three broad approaches to assessing will to fight are available.¹⁵ These are (1) Holism; (2) Narrow Theory; and (3) Key Factors, all described below. Other theories and interpretations may exist and should be examined. A description of the tradeoffs between each approach follows this section and is listed in Table 2.

Holistic Approach. In general: Human behavior is *agentic* or *indeterminate*, meaning that people choose their behaviors while being influenced by a wide range of internal (endogenous) and external (exogenous) factors.

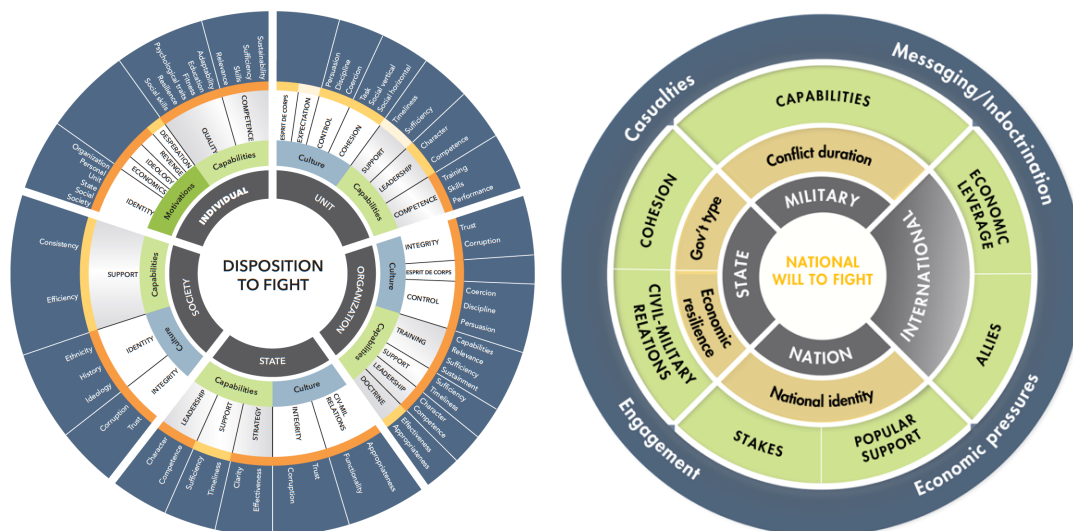
In war, specifically, behavioral choice is influenced by diverse factors including cultural norms, religion, political beliefs, confidence in fitness and training, leadership, cohesion, esprit de corps, corruption, public support, commitment to a cause, et al. In some wars, soldiers may fight primarily because they are ideologically committed (think: Iranian Basij in the Iran-Iraq War), while also being influenced by other factors.

Every war is unique. For example, many Russians fighting in Ukraine today may be driven primarily by cash incentives or may be fighting primarily out of fear of punishment, while Ukrainians may be driven primarily by nationalism and desperation.¹⁶ Factors that may be irrelevant in one war may be very important or

decisive in another. Many less important minor factors can outweigh the importance of one seemingly dominant factor. Factors that at first seem to be unimportant may turn out to be very important when subject to detailed examination, or as circumstances change.

Therefore, it is necessary to *consider* many factors to assess the diverse influences on behavior. This will help isolate factors that are more or less important, and which factors can be shored up or torn down, without running the risk of missing an influence on behavior that might seem unimportant but is actually critical. Figure 2, below, depicts the RAND military and national will-to-fight models. The military model applies 29 factors and 61 sub-factors intended to help focus data collection and analysis. More factors like terrain, messaging, and allied support can be applied for contextual cases. The national model, on the right, centers on the factors, contexts, and mechanisms that influence state-level decisionmaking. These models are intended to be complementary.

Figure 2: RAND Military and National Will-to-Fight Assessment Models



Narrow Theory Approach. In general: Human behavior is, at least to some extent, *deterministic*, meaning that behavior is primarily driven or even directly caused by the strong influence of a single factor.¹⁷

For example, some experts (e.g., Guy L. Siebold) imply, suggest, or clearly state that unit cohesion is the primary determinant of combat behavior.¹⁸ Through this lens, soldiers have more or less will to fight based on the social and task connections they have with their peers and leaders in their primary groups. Generally, narrow theories take into account other factors and relate them to one factor that is considered most important, like cohesion or leadership.

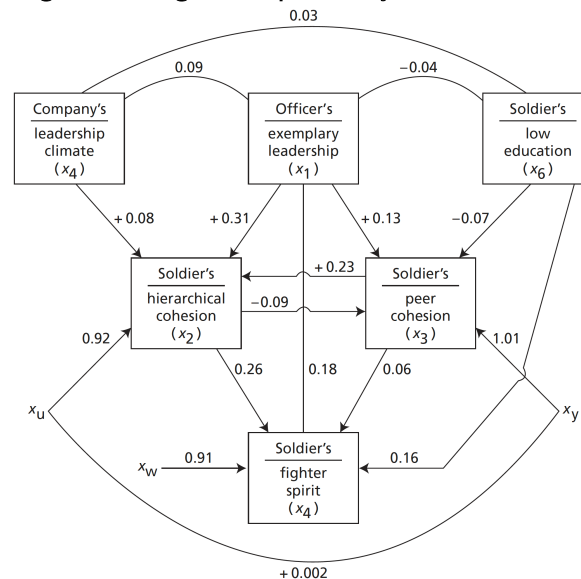
Edward A. Shils and Morris Janowitz wrote what is generally considered to be the foundational study of unit cohesion.¹⁹ They argued that cohesion in the German Wehrmacht in World War II was the primary (narrow) determinator of behavior. All other factors, including nationalism, leadership, and fear, were relevant to understand German behavior primarily as they were related to primary group cohesion.

Narrow theory approach simplifies the study of human behavior and assessments of will to fight and strictly minimizes data collection requirements.

Key Factor Approach. In general: Holism can't be achieved and is too taxing on analytic resources, and narrow theories are too limiting and risky to be useful. In any event, it is too hard to convey both of these approaches to policymakers. Key Factors is a middle ground approach. Human behavior is strongly influenced by a few factors that historic cases suggest are most important; these factors tend to resonate in briefings. To this point, RAND interviews revealed that many military leaders believe will to fight stems from a combination of training, leadership, discipline, and cohesion.²⁰

Several key factor models already exist. For example, Robert B. Smith proposes the Fighter-Spirit model centering on six key factors that emerged from historic cases including leadership, soldier education, cohesion, and soldiers' fighter spirit.²¹ Smith offers a mathematical model that would generate a digestible numeric value of will to fight. Figure 3, below, depicts the Fighter-Spirit key factor model:

Figure 3: Fighter-Spirit Key Factor Model



Another model produced from a study of Dutch combat veterans generated an eight-factor model.²² Anthony King proposes a two-factor theory of combat effectiveness centering on the relative intensiveness of battle drill training and on core group dynamics.²³

The Key Factors approach is generally considered to be reasonable by those seeking better accuracy without what are perceived to be unreasonable demands on resources and staff. It generally focuses on factors that are believed to be measurable.

Consider the Pros and Cons of the Three Theoretical Approaches

All three of these approaches carry tradeoffs relevant to at least four important considerations: (1) resources necessary to develop and apply the theory and methods; (2) the prospective accuracy of the approach; (3) the likelihood that the approach will generate the kind of catastrophic analytic failures we have recently experienced; and (4) the ease with which results of the approach can be briefed to policymakers. See Table 2, below, for a comparative analysis of tradeoffs.

Holism pros and cons. Holism is the most resource intensive approach. Considering and then assessing many factors that influence human behavioral disposition requires more expertise, more data collection, and more staff analysis hours than either of the other two approaches. Holism carries the risk of opening the aperture for analysis so wide that it might overwhelm both collection and analytic resources. A holistic process can also create problems with briefing: Describing the results of (for example) a 29-factor analysis to policymakers can be difficult. The most common complaint regarding the RAND will-to-fight model is that it has “too many factors.”²⁴ In trade for these challenges, holism arguably offers the best prospective for accurate results and the lowest likelihood of catastrophic failure. Holism also offers safe, methodical routes to develop more focused narrow or key factor analyses: Once all factors are considered, analysts might choose to focus on one or a few selected factors for further analysis.

Narrow theory pros and cons. Narrow theory is the least resource intensive approach. Focusing collection and analysis on a single important factor is parsimonious. Expertise—including from outside sources—can be precisely targeted. Briefing narrow theory analyses is also relatively easy, and the likelihood of successfully communicating results to policymakers is high. However, narrow theory has only modest prospective for accuracy because it may encourage collectors and analysts to ignore reams of potentially confounding data. Narrow theory also has the highest prospects of catastrophic failure. An all-in bet on the value of one aspect of human behavior in the absence of empirically proven, scientifically accepted proof of that factor’s singular importance arguably carries equivalent risk to placing an all-in casino bet on a single roulette number.

Key factor pros and cons. Key factor is the middle-ground approach, but two of its tradeoffs are perhaps unexpectedly negative. Resource demands and ease of briefing leverage modest tradeoffs. Analyzing a few factors necessarily requires fewer resources than many factors but somewhat more resources than a single factor. Resource demands will scale to the number of factors selected. Similarly, briefing a few factors is easier than many and a bit harder than one; briefing challenges will also scale with the number of factors. However, prospective accuracy with this approach is the lowest of the three approaches, and the risk of catastrophic failure is perhaps surprisingly high. By hedging bets across a few factors, this approach nullifies the prospective research-driven value of the narrow theory approach: It gives up the risky possibility of being absolutely right in exchange for a slightly more diverse analysis, but in doing so adds considerable subjectivity. There is no proven “right” set of factors, so picking a few factors that seem to matter and subjectively eschewing many others compounds the likelihood of inaccuracy and sharply increases the risk of failure.

Table 2, below, depicts these tradeoffs. Other tradeoffs exist and should be considered as institutions weight broad assessment approaches.

Table 2: Pros and Cons of Theoretical Approaches to Assessment

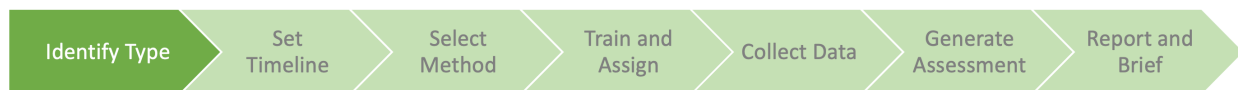
	Holism	Narrow Theory	Key Factors
Resources	Most	Least	Middle
Prospective accuracy	Highest	Middle	Lowest
Likelihood of failure	Lowest	Highest	High
Ease of briefing	Hardest	Easiest	Middle

PHASES 4 and 5: Select and Apply Methods and Resources

Once the institution selects levels of assessment and the primary approach (or approaches) to be applied, the next phase focuses on selecting methods and applying resources to build and run the assessment program. This requires working through seven considerations and investments, each described below:

- (1) Identifying type(s) of assessment: General, contextual, comparative
- (2) Setting a timeline for *background* and *crisis* assessments
- (3) Selecting assessment method(s)
- (4) Training and assigning analysts and analyst managers
- (5) Identifying collection requirements and applying assets to collect data
- (6) Generating prioritized background assessments
- (7) Reporting and briefing

(1) Identify type(s) of assessment. Any or all of the three broad types of will-to-fight assessment could be applied by a single institution: general, contextual, and comparative.²⁵

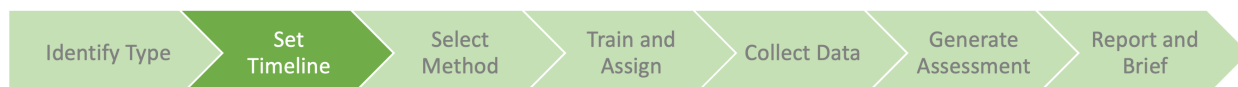


General will-to-fight assessment focuses on the baseline disposition to fight, act, or persevere in any future war. Factors are assessed out of context. For example, an assessment might say that a military unit has strong esprit de corps, without describing how that esprit might strengthen or weaken will to fight in a given scenario. This type of assessment is typically used to provide a substantive basis for a prospective range of *contextual* assessments.

Contextual assessments place a military unit, military organization, or state in a specific crisis. Evidence is collected and assessed to show how soldiers, military leaders, and state leaders are likely to fight, act, or persevere in an ongoing or expected conflict. Contextual assessments include all the aspects of general assessment and typically add in a range of additional considerations.

Comparative assessments integrate two or more contextual assessments of competing military forces or states. Comparison can reveal the ways in which opposing strengths and weaknesses are likely to be exploited by each side, and to help increase policymaker understanding of the crisis. This approach correlates closely to the process of net assessment.²⁶

(2) Setting timelines for production: Baseline and crisis. Institutions should set objective timelines for two types of production, *baseline* and *crisis*.



Baseline (typically general) assessments constitute the bulk of both time and resource requirements. Building from existing and newly collected evidence, analysts apply selected theories and methods to write detailed assessments focusing on the most enduring characteristics of will to fight. For example, analysts examining the will to fight

of an adversary state might focus on a detailed breakdown of adversary culture and cultural influences on state decisionmaking. This detailed work provides a stable and generally enduring platform for *crisis* assessments. Once written, baseline assessments can be maintained with significantly reduced effort and collection.

Crisis assessments typically build from the baseline. With enduring factors in hand, analysts can focus on those influences on human decisionmaking most likely to change quickly due to exigent circumstances like a war. For example, working from a baseline analysis of adversary culture, analysts might focus on the more immediate and dynamic impact of casualties or fickle popular support. Crisis assessments can be thrown together without a baseline, using the institution's preferred theory and methods. However, without a baseline the crisis assessment is far more likely to be inaccurate and, possibly, misleading.

(3) Selecting assessment methods. Methods should align with the theory of assessment selected in Phase 3, above, and for efficiency should be selected before data are gathered. Many different assessment methods are available and are more or less appropriate for each level of assessment, theory, type, and target of assessment. These examples are offered to help focus initial searches for appropriate methods.



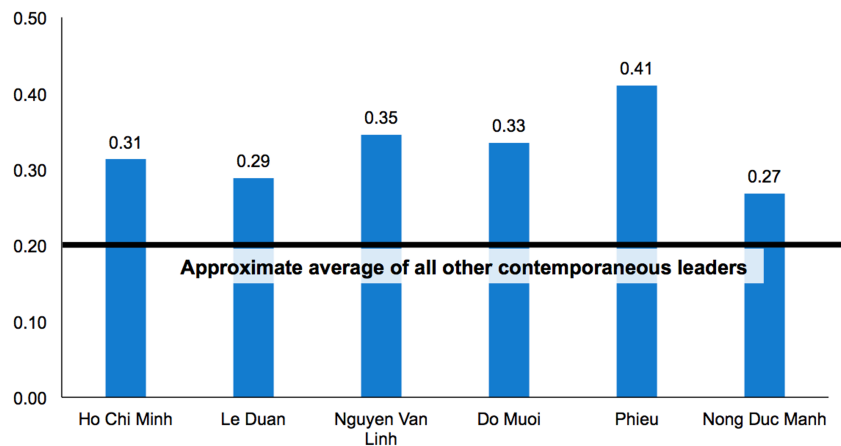
Holistic factor assessments apply the holistic theory, assuming that behavior is influenced by a potentially wide array of factors. Analysts use an inclusive, adaptable factor set to screen for possible influences, to help direct the collection of data, and to help build a nuanced description of will to fight. Each factor is assessed and rated separately to help identify strengths and weaknesses, and opportunities for exploitation. Factors are *not* averaged or weighted to avoid flattening out potentially essential findings. The 2018 RAND military model has 29 general factors, 9 contextual factors, and a range of subfactors that can be assessed, while the 2018 RAND national model has fifteen factors, contexts, and mechanisms used to understand the will to fight of state leadership. The military model has been applied to the Iraqi Army, the Russian Ground Force, the Ukrainian Army, and the Afghan security forces.²⁷ Results can be presented in a range of narrative and visual formats.

Calculated factor assessments apply either the holistic or key factor theories. Factors are identified, collected against, analyzed and then given rating scores. These scores are then run through one or more formulas to generate a distilled quantitative result that can be easily digested by policymakers. Factors can be weighted with more or less relative value, and then summed or averaged to produce an overall result.²⁸ Or factors can be summed or averaged without weighting. Final scores can then be compared to a *rating definition level*, an interval or ratio scale that assigns a description to each score. For example, on a scale of one to ten, a score of one (or zero) to three might indicate very low to low will to fight. Results can be presented as a single score for ease of briefing and backed by a written narrative report. Smith's Fighter-Spirit model is an example of a calculated factor assessment with weighting and averaging.²⁹

Leader behavioral profile assessments can be used to forecast state-level will to fight. Considerable work in (primarily) political science, international relations, and psychology to apply models to understand state leader behavioral selection in war exists.³⁰ This kind of assessment could include a remote psychological profile

integrated with a factor approach like the RAND national will-to-fight model. The Leader Experience, Attribute, and Decision (LEAD) dataset provides a good example that might be modified for will-to-fight assessments. Scholars at the University of Virginia profiled 2,000 state leaders (1875-2004) to help understand their propensity to accept risk, amongst other relevant traits.³¹ Other approaches exist, and challenges with this approach should be carefully explored.³² Figure 4, below, depicts comparative LEAD score results showing risk acceptance of key leaders of the Democratic Republic of Vietnam (DRV, or North Vietnam) including Ho Chi Minh, Le Duan, and Nguyen Van Linh.³³

Figure 4: Comparative LEAD Risk Acceptance Scores for DRV Leaders



Combat effectiveness, combat power, and comparative correlation of forces assessments seek to roll together will to fight with more easily quantifiable and physically measurable aspects of military power. Many experts have developed these types of assessments, and some have applied them to historic cases. Generally, subject-matter experts identify a sizable number of factors that are believed to influence and constitute effectiveness, power, or relative force. These often include the quantity and quality of armored vehicles and infantry weapons and air power, and sometimes include harder-to-measure factors like leadership, training, literacy, physical fitness, et al. National-level models with fewer factors proliferate, particularly in the fields of political science and international relations.³⁴ Detailed military estimates are rarer. Examples of military estimates include the Soldier Capability Army Combat Effectiveness (SCACE) rating system, Huba Wass de Czege's combat power model, and the U.S. Army's correlation of forces calculator.³⁵

(4) Training and assigning analysts and analyst managers. Ideally, all military and national analysts would receive basic instruction in the theories and concepts associated with will to fight, and in basic assessment methods.



At the very least, analysts assigned to conduct will-to-fight assessments should receive instruction in:

- Will to fight definitions and basic concepts

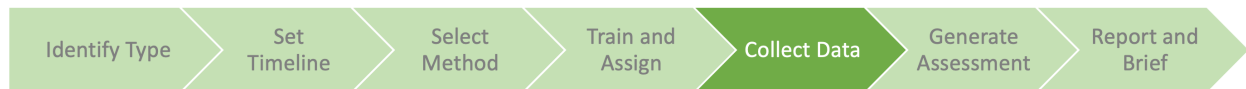
- Impact of will to fight assessment in historical cases
- Theories of human behavior and associated methods
- Methodological application and gap identification
- Tailoring outputs for consumers
- Briefing techniques

Following Step 4, above (Setting timelines for production), institutions should prioritize adversary and partner forces and state leadership groups for assessment. Then, they should assign teams to build *baseline* will-to-fight assessments. These are rigorous, long-term, long-form, living products that provide the foundation for crisis assessments.

To reduce impact on other analytic tasks and resources, baseline work can be assigned to junior analysts, analysts between assignments, or to contractors. External, non-governmental expertise should be used to supplement analytic teams (e.g., an expert in the Chinese military might inform a will-to-fight assessment of the People's Liberation Army).

Analyst managers should also receive introductory training in will-to-fight concepts, methods, and reporting and briefing techniques. If baseline assessments are assigned to junior staff or contractors, managers should apply a rigorous quality assurance process to ensure work meets institutional standards, and to preclude the need for extra work during emerging crises.

(5) Data collection. Will-to-fight assessment should be treated like any other analytic challenge: Once a target, theory, and method are selected, data must be acquired.



For baseline analysis, most information will be either unclassified or already available at low levels of classification. Understanding culture, picking through historical performance, and describing issues like national identity and corruption should require minimal additional data. However, during the initial baseline process, analysts should methodically identify data gaps and file requests for tailored data collection. Focused data can then be gathered by intelligence experts or through unclassified research. Table 3, below, suggests types of data that might be collected to inform a narrow theory assessment for a partner (friendly) military force, this one notionally centered on primary group cohesion.³⁶

Table 3: Possible Data Collection for a Notional Narrow Theory Assessment

Primary group cohesion	Task cohesion	# days of primary group work
		Description of task challenges
	Social cohesion	Survey of soldiers on peer relationships
		Advisor observations of peer relationships
	Leadership	Advisor assessments of leaders
		Official leadership evaluations
	Discipline	Number and type of disciplinary incidents
		Cultural appropriateness of control
	Training	Unit collective training type, effectiveness
		Training required vs. training completed

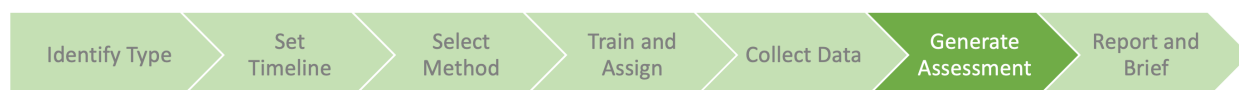
Many other types of existing data can be referenced or collected, ranging from national literacy rates to economic data to sociological studies conducted in native languages. For example, an unclassified 2012 Russian military sociological study that had been posted on the Russian Ministry of Defense website provided remarkably clear and apparently accurate insight into the factors affecting Russian military will to fight.³⁷ It described the impact of low pay, low public support for the military, low quality of draftees, poor housing, and inadequate military resources on the combat effectiveness of Russian forces. Officers surveyed for this study suggested that 70% of Russian units were not combat effective. Many of the insights provided in this study, as well as in declassified intelligence reports on Soviet Army morale in the 1980s, resonate with evidence of middling Russian will to fight in Ukraine in 2022.³⁸

For adversary military forces in denied (hard to access) areas like North Korea, little direct evidence from military units will be available to analysts; gauging tactical leadership, esprit de corps, cohesion, equipment effectiveness, and logistics support will be difficult if not impossible, even through classified means. In these cases, more observable factors at the national level can help frame an incomplete assessment while identifying gaps for collection. Analysts should be careful not to lean too heavily on reporting from defectors and prisoners when assessing will to fight since this kind of evidence has proven to be uncertain or misleading in historical cases.

During an ongoing war, analysts are more likely to face a deluge of information of varying accuracy and usefulness. For example, during the Vietnam War the U.S. military intercepted thousands of adversary radio messages and written reports describing personnel and resource challenges in units of both the People's Army of Viet Nam (PAVN) and the southern forces commonly referred to as the Viet Cong.³⁹ Given the cultural tradition of self-assessment in Vietnamese Communist forces, these reports probably gave accurate insights into the will to fight of specific units.

Sousveillance (participant recording) and curated digital video evidence from the 2022- Russia-Ukraine War has provided at least thousands of hours of what might be described as primary source evidence from combat and support units, and from civilians supporting or opposing respective war efforts. Passive collection through YouTube, Telegram, and Signal channels can provide some insight into will to fight, but given the narrow and often carefully targeted nature of digital dissemination—and outright propaganda influence—this kind of evidence should only be used to round out will-to-fight assessments and should not constitute assessment absent other inputs.

(6) Generating assessments. With data collected, analysts can generate assessments to *inform* and *forecast*.



Inform. General, contextual, and comparative assessments of will to fight describe the will to fight of adversary or partner military forces or state leaders. Reports can be referenced by military and political leaders to understand will to fight, and to help improve training and education programs to help analysts, leaders, and advisors target or improve will to fight. General reports also inform (provide the basis for) crisis assessments.

Forecast. All three types of reports—general, contextual, and comparative—can also be used to forecast the likelihood that a military force or state will fight, act, or persevere in a given conflict. Contextual and comparative reports are best suited for forecasting. Military forecasts can be used to identify weak points in adversary will to fight that can be translated for informational or kinetic targeting, and to help shore up partner will to fight. National forecasts can be used to inform deterrent strategies and to gauge the likelihood that actions like sanctions or casualty generation will weaken adversaries or allies.

Baseline reporting should be subject to continual (or, if resources are available, continuous) improvement to sustain accuracy, identify emerging gaps in knowledge, and to provide the best possible basis for crisis assessments. New and more detailed information learned during crises should be backfilled into the baseline reports. See Phase 6, below.

(7) Reporting and briefing. Will-to-fight assessments are useless if they do not effectively inform military and political decisionmaking. Communicating complex human behavioral assessments and forecasts requires planning, resources, and focus. Reports should be clearly *cited* and *transparent*, and whenever possible briefings should be *tailored* for individual decisionmakers.



Cited. Evidence supporting assessments should be provided in detail and made readily accessible to consumers. Communicating will-to-fight insights and forecasts is difficult, and many consumers are skeptical that any accuracy can be achieved. Providing “black box” assessments is a sure pathway to failure. Intelligence Community Directives 203 and 206, cited above, provide the best guidance for citation in reports intended to reach (particularly) U.S. Government consumers.

Transparent. As with citation, detailed analysis, methods, and information gaps should be clearly recorded and made available to consumers, even if briefings present only summary findings. Perhaps most importantly, all assessments of will to fight should be presented using the kind of cautious estimative language recommended by Sherman Kent of the U.S. Central Intelligence Agency. Will-to-fight assessments are always uncertain to some extent, just like nearly all (or arguably, all) intelligence estimates.

Kent recommended using estimative words corresponding with a percentage likelihood of accuracy. Table 4, below, depicts Kent’s original recommendations.⁴⁰ These have been adopted and adapted by many intelligence and defense agencies. *Likely* and *unlikely* are commonly used, but any reasonable version of these words is appropriate for will-to-fight assessment.

Table 4: Sherman Kent’s Words of Estimative Probability

100% certainty			
The general area of possibility	93%	Give or take almost 6%	Almost certain
	75%	Give or take about 12%	Probable
	50%	Give or take about 10%	Chances about even
	30%	Give or take about 10%	Probably not
	7%	Give or take about 5%	Almost certainly not
0% Impossibility			

Tailored. Every policymaker receives and processes information differently. Some prefer simple images, others detailed charts or even raw data, others written narratives, and others prefer to engage in discussion with analysts. Inherent skepticism with will-to-fight assessments can be overcome in part by shaping reports and briefings to best match consumer preference. This should always be a two-part process: First, generate the detailed assessment with ample citation, transparent methods, and estimative language; then, generate tailored reports and briefings. Leapfrogging to short, easy-to-digest reports and visualizations will decrease accuracy and leave institutions vulnerable to justifiable policymaker critique. The following four examples suggest ways in which analysts can tailor briefing at multiple levels of focus.

This first example in Figure 4, below, depicts an automatically generated chart from a holistic factor analysis Excel tool developed from the RAND military will-to-fight model. This notional contextual assessment provides insight into the relative influence of 38 factors on an adversary military organization's will to fight. In this case, four factors stand out as offering opportunity to degrade enemy will: economics, civil-military relations, state leadership, and messaging. Soldiers are driven primarily by pay but pay is paltry and unreliable. Fractures between civilian and military leadership and weak civilian leaders are undermining faith in the government, and in the war. Adversary messaging is ineffective, but allied messaging attacking war aims is having good effects. This chart is both transparent in that it shows all factors, but relatively easy to digest because it highlights key factors from the assessment.

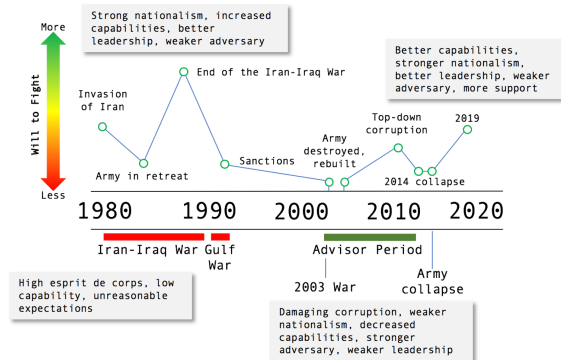
Figure 4: Notional Holistic Factor Assessment Chart for a Military Organization



This next example is from a real-world general holistic assessment of the U.S.-partnered Iraqi Army, published in *Iraqi Army Will to Fight* (RAND, 2022). This baseline assessment was conducted over the course of a year. It cites hundreds of sources and provides a case history of Iraqi Army will to fight from the Iran-Iraq War to the post-2003 advisory period. Findings and recommendations are tailored for U.S. security force assistance. See Figure 5, below.

The overall finding is that the Iraqi Army is brittle, resulting primarily from paternalistic top-down control, lack of adaptability, weak junior leadership, and other factors. Ethno-sectarian divisions were not found to be a significant drain on Iraqi Army will to fight, and nationalism has been an increasing source of strength. Recommendations focus on helping the Iraqis to continuously reduce brittleness and rebalance their security forces over time through persistent training support and engagements. This bullet-point briefing slide is derived from a fully detailed and cited holistic assessment that is available in a transparent long-form narrative report.

Figure 5: Real-World Iraqi Army Partner General Holistic Assessment



Overall Findings

1. Iraq's Army is brittle—courage in context
2. Non-special units are particularly vulnerable
3. Iraqis are capable—investment is worthwhile
4. Nationalism trumps ethno-sectarianism
5. Top-down control is a core cultural norm

Top 5 Recommendations

1. **Balance the force:** Place increased security force assistance emphasis on the regular Army
2. **Keep trying to build junior leaders:** Apply constant pressure to change the top-down culture
3. **Link the Army and nationalist spirit:** The Army is the most respected organization in Iraq
4. **Rebuild regular Army esprit de corps:** Emphasize stories of individual courage
5. **Expect dependency and use it to advantage:** U.S. relationship with Iraq's Army is mutually beneficial

Figure 6, below, is a comparative holistic assessment showing the differences between the factors most likely to influence Russian and Ukrainian will to fight in mid-2022.⁴¹ Twenty-one factors from the RAND military will-to-fight model were assessed for each side. This could be considered a holistic or key factors assessment. In the absence of a substantial baseline assessment, this is an expert-driven, snapshot *crisis* assessment and should not be used to inform decisionmaking. It shows how even a handful of important factors can override a range of negative or positive influences on will to fight. In this case (**pre mobilization**) the assessment suggests Russian will to fight would be sustainable even in the face of heavy casualties due primarily to pay incentives, strong organizational control (discipline), and effective national messaging inside Russia.

Figure 6: Snapshot Comparative Assessment Russia and Ukraine July 2022

RUSSIA										UKRAINE									
FACTORS	Severely degrade-degrade			Slightly lessen-slightly strengthen			Strengthen-greatly strengthen			FACTORS	Severely degrade-degrade			Slightly lessen-slightly strengthen			Strengthen-greatly strengthen		
	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	9
Ideology										For many, existential threat to country and families								8	
Economics										Some want revenge for invasion, casualties								7	
Individual Identity										Very strong Ukrainian identity ties disparate fighters together								9	
Quality										Increasing reliance on unprepared people									
Expectation										Mixed soldiers & volunteers									
Unit Competence										Good integration, foreign fighter mix									
Unit Support										Uneven internal training...									
Organizational Training										Smooth coordination and support									
Doctrine										Major corruption...									
Organizational Leadership										Effective but counteroffensive questionable									
Organizational Control										President, others, galvanizing Ukrainian resistance								8	
Civil-Military Relations										Collective Ukrainian identity feeds defenders' will to fight								9	
State Support										Ukrainian civilian mobilization, sacrifices to support fighters								9	
State Strategy										Fighters believe in the mission, coordination is mixed								8	
State Leadership										Russians not living up to their reputation, yet								7	
Societal Support										Weak Russian performance in north so far								7	
Mission										Underperforming but still very dangerous								7	
Adversary Performance										Not a major factor thus far...								5	
Adversary Equipment										Extremely effective Ukrainian and global messaging								9	
Messaging										Providing weapons, support, but not fighting								7	
Allies																			

Outlook: Sustainable military will to fight and capacity to overcome casualties due primarily to *economics, control, societal support, and messaging*.

Outlook: Sustainable military will to fight heavily dependent on *messaging* and *allies*, counteroffensive in the Donbas would require re-assessment.

Another way to summarize findings for military and political decisionmakers is to generate derivative text like the “outlook” summaries at the bottom of Figure 6, above. Narrow theory approaches lend themselves to short, decisive summary results suitable for briefing and particularly for one-page summary reports.

This is *notional* example of a narrow theory summary derived from the comparative assessments of Russian and Ukrainian will to fight in Figure 6. It summarizes the will to fight of both sides using insights from the Devoted Actor Model, a narrow theory model centering on evidence suggesting “sacred values,” including spiritual, ideological, and national values transcend material needs and motivations.⁴² Through this focused approach, this notional assessment strips away the other factors from the holistic model and focuses on the equivalent of individual and societal identity and mission.

Russian will to fight: In the short term (1-3 months **from July 2022**), Russian nationalism, reinforced by state messaging and suppression of casualty reports, will likely be sufficient to motivate current soldiers, new conscripts, and recruits. Russian belief that NATO, through Ukraine, poses an existential threat to the *rodina* (motherland) is uneven but sufficient to sustain national will, which in turn feeds and sustains military will. Beyond three months, cracks in state messaging and increasing casualty figures may begin to undermine Russian will to fight.

Ukrainian will to fight: In the short term (1-3 months **from July 2022**), Ukrainian nationalism and cultural identity will likely be sufficient to sustain military will to fight and to ensure sufficient recruits are available to replace high combat losses. However, it remains to be seen if Ukrainian spiritual motivation will be insufficient to sustain a high-casualty counteroffensive to regain the Donbas, given uneven Ukrainian identity in that region. Beyond three months, Ukrainian fighting spirit/will to fight can probably be sustained as long as the Ukrainian government refrains from ceding occupied territory to the Russians as part of a negotiated settlement.

Any mix of these approaches, or a range of other approaches can be applied to brief military and political decisionmakers. However, analysts and analyst managers should be wary of any pressure to average or distill will-to-fight assessments to the point that important context and nuance is lost. This is a complex problem not amenable to simple or easy-to-digest summaries; compromises with busy consumers should be carefully negotiated so analytic effort is not wasted and simplified results do not mislead.

PHASE 6: Sustain, Revise, and Learn

Baseline assessments will need at least continual revision and would benefit from at least a low-level continuous maintenance process. Once the initial work is done, this maintenance can be accomplished with fewer analytic and collection resources. Analysts should routinely add citation and periodically revise baseline assessments. A six-month re-assessment cycle probably would be suitable as long as sources and gaps were continually updated.

Collection requirements should also be periodically revisited, informed by analysts' gap identification. The more recent and accurate collection can be acquired during non-crisis periods, the more quickly and effectively analysts will be able to generate contextual assessments during a crisis.

Analysts should receive refresher training on will-to-fight concepts and they should be encouraged to find ways to integrate will-to-fight theories, methods, and data into broader assessments of combat power, indications and warning, and political

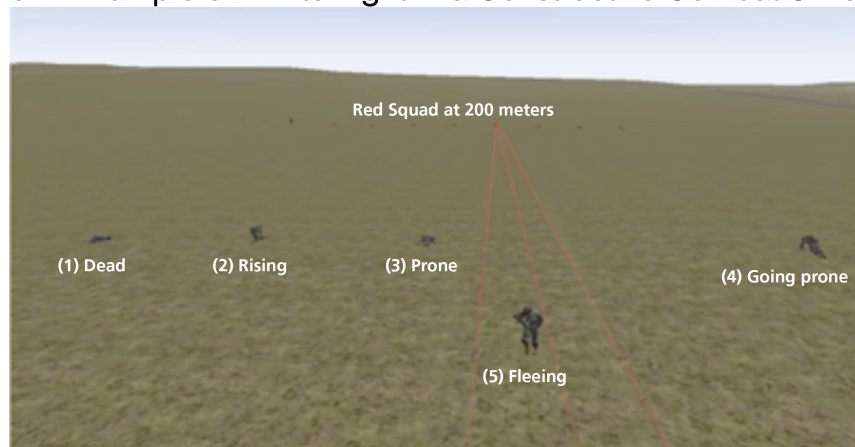
decisionmaking forecasts. Analyst supervisors and methodological experts should find ways to merge will-to-fight assessments with technical, materiel assessments to generate improved understanding of combat effectiveness (or combat power).

Institutions should schedule periodic reviews of will-to-fight assessment methodology. Working from the going-in assumption that this is not settled science, there is considerable room to improve upon theories, methods, and reporting and briefing techniques. Analysts should be encouraged to provide feedback to institutional approaches. Institutions should share lessons through interagency engagements.

Tabletop exercises and computer simulations can and should be used to inform both a general understanding of will to fight and specific military and national targets. Will to fight is generally not incorporated into professional military games and simulations.⁴³ Arguably, lack of authentic human behavior representation has rendered even the most expensive simulations (hundreds of millions of dollars) useless.⁴⁴ There is some awareness of this problem across NATO countries, and specific efforts are being made to better understand human will through gaming and simulation.

Figure 7, below, depicts a screenshot from a simulation experiment that added individual personality profiles—will to fight—to soldiers in combat.⁴⁵ Some soldiers take cover when fired at, one flees. This experiment led to the development of a full will-to-fight simulation model that was incorporated into the U.S. Army's OneSAF force-on-force combat simulation.

Figure 7: Example of Will to Fight in a Constructive Combat Simulation



The RAND team found that adding will to fight significantly altered the outcomes of combat simulation. The same is true of tabletop exercises, any of which can be designed to help military leaders and policymakers focus on and better understand will to fight in conventional war, irregular war, and for deterrence and national decisionmaking. Assessments, games, and simulations can also be used to improve understanding of human behavior in great power competition.

Final Note: Will to Act in Competition

Most military-to-military and state-to-state engagement occurs outside of the confines of war. Human will is arguably the primary determinant in the outcome of competition as well as in war. Theories and methods applied to will-to-fight assessment can be adapted towards assessing *will to act* in great power competition. These assessments can be bounded within institutional programs centering on will to fight.

Endnotes

- ¹ Dean Rusk, quoted in: John Mueller, "The Search for the 'Breaking Point' in Vietnam: The Statistics of a Deadly Quarrel," *International Studies Quarterly*, Vol. 24, No. 4, December 1980, pp. 497-519, p. 497.
- ² James Clapper, quoted in: David Ignatius, "James Clapper: We underestimated the Islamic State's 'will to fight,'" *The Washington Post*, September 18, 2014.
- ³ Phil Stewart and Patricia Zengerle, "Afghan army collapse 'took us all by surprise,' U.S. defense secretary says," *Reuters*, September 28, 2021.
- ⁴ Scott D. Berrier, testimony before the U.S. Senate Select Committee on Intelligence, March 10, 2022. As of June 27, 2022: <https://www.intelligence.senate.gov/hearings/open-hearing-worldwide-threats-2>
- ⁵ Angus King, quoted in: Julian E. Barnes, "Pentagon Pressed to Review How It Judges an Ally's Will to Fight," *The New York Times*, June 22, 2022.
- ⁶ Barnes, *The New York Times*, 2022.
- ⁷ For more discussion on previous failures and on the concepts of will to fight and will-to-fight assessment, see: Ben Connable, et al., *Will to Fight: Assessing, Modeling, and Simulating the Will to Fight of Military Units*, Santa Monica, Calif.: RAND Corporation, 2018. Available online at www.rand.org.
- ⁸ Certainly, others may have tried behind closed doors. If so, the results of their work should be shared more effectively. See Connable, et al., RAND, 2018, Chapter 1 and Appendix C for a discussion of previous efforts.
- ⁹ As of June 28, 2022, U.S. Intelligence Community directives can be found at: <https://www.dni.gov/index.php/what-we-do/ic-related-menus/ic-related-links/intelligence-community-directives>. Randolph H. Pherson and Richards J. Heuer, Jr., *Structured Analytic Techniques for Intelligence Analysis*, third edition, Sage Publishing/CQ Press, 2019; U.S. Government, *A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis*, March 2009. As of June 28, 2022: <https://www.cia.gov/static/955180a45afe3f5013772c313b16face/Tradecraft-Primer-apr09.pdf>
- ¹⁰ For more on this point see Connable, et al., RAND, 2018, Chapter 1.
- ¹¹ Defense officials are still arguing over the definition of *irregular warfare* fifteen years after the publication of the 2007 Irregular Warfare Joint Operating Concept (JOC) and two years after the publication of the Irregular Warfare Annex to the 2018 National Defense Strategy. Lack of a concrete, generally agreed upon definition has helped to render both the JOC and the Annex—the latter of which was signed by the Acting Secretary of Defense—relatively impotent.
- ¹² See Michael J. McNerney, et al., *National Will to Fight: Why Some States Keep Fighting and Others Don't*, Santa Monica, Calif.: RAND Corporation, 2018.
- ¹³ This is my working definition integrated from the sources cited in this paper, et al.
- ¹⁴ See Connable, et al., RAND, 2018, Chapter 1, for a discussion of morale and cohesion. See the section on Narrow Theory in this primer for more on cohesion.
- ¹⁵ Other approaches may exist and should be considered. These three reflect my understanding of existing research.
- ¹⁶ For an example of will-to-fight assessment of these two armies, see: Ben Connable, "Ukrainian and Russian Will to Fight: An Early-War Assessment," *Lawfare*, March 4, 2022.
- ¹⁷ Not all proponents of narrow theories would describe their perspective as deterministic, and some might find this description pejorative. They may describe their theories as agentic, with choice primarily influenced by a narrow or single factor, or they may not adhere to either a deterministic or agentic understanding of human behavior.
- ¹⁸ This is my interpretation, Siebold might dispute my characterization. See, for example: Guy L. Siebold, "The Evolution of the Measurement of Cohesion," *Military Psychology*, Vol. 11, No. 1, 1999, pp. 5-26; Guy L. Siebold, "The Essence of Military Group Cohesion," *Armed Forces and Society*, Vol. 33, No. 2, 2007, pp. 286-295. Also see various work by Anthony King at Exeter University. King suggests training is the dominant factor in combat success, if not necessarily the most important factor in will to fight.
- ¹⁹ Edward A. Shils and Morris Janowitz, "Cohesion and Disintegration in the Wehrmacht in World War II," *Public Opinion Quarterly*, Vol. 12, No. 2, 1948, pp. 280-315.
- ²⁰ See Connable, et al., RAND, 2018, Appendix D, for a list of factors provided by a range of military experts, including senior general officers across NATO countries.
- ²¹ Robert B. Smith, "Why Soldiers Fight. Part I. Leadership, Cohesion, and Fighter Spirit," *Quality and Quantity*, Vol. 18, No. 1, 1983, pp. 1-32.
- ²² Peter van den Aker, Jacco Duel, and Joseph Soeters, "Combat Motivation and Combat Action: Dutch Soldiers in Operations Since the Second World War; A Research Note," *Armed Forces and Society*, Vol. 42, No. 1, 2016, pp. 211-225.
- ²³ Anthony King, "On Combat Effectiveness in the Infantry Platoon: Beyond the Primary Group Thesis," *Security Studies*, Vol. 25, No. 4, 2016, pp. 699-728.
- ²⁴ These complaints were made to me, directly, and to my research colleagues repeatedly by analysts and policymakers over the course of several years.
- ²⁵ Other approaches may exist, or different terms might be applied to these categories. These three categories were identified during the RAND research and during my subsequent research.

²⁶ This approach was developed and popularized by the U.S. Department of Defense's Office of Net Assessment. For a layman's description, see, for example: Paul Bracken, "Net Assessment: A Practical Guide," *Parameters*, Vol. 36, No. 1, 2006, pp. 90-100.

²⁷ See <https://benconnable.com> for several examples. Ben Connable, *Iraqi Army Will to Fight: A Will-to-Fight Case Study with Lessons for Western Security Force Assistance*, Santa Monica, Calif.: RAND Corporation, 2022; Ben Connable, "Understanding the Failure of Afghan Will to Fight: A Short Guide for Current and Future Events," *benconnable.com*, 2021; Ben Connable, "Ukrainian and Russian Will to Fight: An Early-War Assessment," *Lawfare*, March 4, 2022.

²⁸ Weighting, summing, and averaging assessments is a potentially fraught process that can undermine accuracy, bury important confounding factors, and significantly increase chances of catastrophic failure. Assessments of campaign progress in the Vietnam and Afghanistan Wars were routinely averaged and distilled to narrow results. For more on these challenges see: Ben Connable, *Embracing the Fog of War: Assessment and Metrics in Counterinsurgency*, Santa Monica, Calif.: RAND Corporation, 2012.

²⁹ Smith, *Quality and Quantity*, 1983.

³⁰ See, for example: Nathan Leites, *The Operational Code of the Politburo*, New York, N.Y.: McGraw-Hill, 1951; Brewster M. Smith, "A Map for the Analysis of Personality and Politics," *Journal of Social Issues*, Vol. 24, No. 3, 1968, pp. 15-28; Jerrold M. Post, ed., *The Psychological Assessment of Political Leaders: With Profiles of Saddam Hussein and Bill Clinton*, Ann Arbor, Mich.: The University of Michigan Press, 2005.

³¹ Cali Mortenson Ellis, Michael C. Horowitz, and Allan C. Stam, "Introducing the LEAD Data Set," *International Interactions*, Vol. 41, No. 4, 2014, pp. 718-741.

³² See, for example: Margaret G. Hermann, *Assessing Leadership Style: A Trait Analysis*, Social Science Automation, November 1999; and mark Schafer, "Issues in Assessing Psychological Characteristics at a Distance: An Introduction to the Symposium," *Political Psychology*, Vol. 21, No. 3, 2000, pp. 511-527.

³³ This chart was created for a forthcoming report to be authored by Ben Connable, all right reserved.

³⁴ See, for example: The collective works of Hans J. Morgenthau; Klaus Knorr, *The Power of Nations: The Political Economy of International Relations*, New York, N.Y.: Basic Books, 1975; Gregory F. Treverton and Seth G. Jones, *Measuring National Power*, Santa Monica, Calif.: RAND Corporation, 2005; et al.

³⁵ Correlation of force calculations derives from a Cold War era approach to assessing relative nuclear weapons power. For more on each of these models, see: Trevor N. Dupuy and Gay M. Hammerman, *Soldier Capability-Army Combat Effectiveness (SCACE): Volume III Historical Combat Data Analysis*, Dunn Loring, Va.: U.S. Army Soldier Support Center, December 1980; Huba Wass de Czege, *Understanding and Developing Combat Power*, Fort Leavenworth, Kan.: U.S. Army, February 1984; Allen D. Raymond, *Assessing Combat Power: A Methodology for Tactical Battle Staffs*, Fort Leavenworth, Kan.: U.S. Army Command and General Staff College, 1992; Dale Spurlin and Matthew Green, "Demystifying the Correlation of Forces Calculator," *Infantry*, January-March 2017, pp. 14-17; Joseph E. McCarthy, "Combat Values: A Unified Input for Correlation of Forces and Means," *PHALANX*, Vol. 53, No. 4, December 2020, pp. 34-41; et al.

³⁶ Considerable existing work exists on primary group cohesion assessment, some of which may provide useful approaches for data collection. See, for example, the previously cited work by Guy Siebold; John H. Johns, et al., *Cohesion in the U.S. Military*, Washington, D.C.: Industrial College of the Armed Forces, 1984; Fred A. Mael and Cathie E. Alderks, "Leadership Team Cohesion and Subordinate Work Unit Morale and Performance," *Military Psychology*, Vol. 5, No. 3, undated, pp. 141-158; Laurel W. Oliver, *Cohesion Research: Conceptual and Methodological Issues*, U.S. Army Research Institute for the Behavioral and Social Sciences, September 1990; James Griffith, "Multilevel Analysis of Cohesion's Relation to Stress, Well-Being, Identification, Disintegration, and Perceived Combat Readiness," *Military Psychology*, Vol. 14, No. 3, 2002, pp. 217-239; Elizabeth Sibolboro Mezzacappa, *Group Cohesiveness, Deviation, Stress, and Conformity*, dissertation, Bethesda, Mary.: Uniformed Services University of the Health Sciences, 1993; Herbert Jacobs, *Further Examination of the Unit Cohesion Index*, Fort Sam Houston, Tex.: United States Health Services Command, September 1990.

³⁷ Ministry of Defense of the Russian Federation, *Russian Army: Social Problems and Ways to Solve Them*, 2012. This article was posted on the Russian Ministry of Defense website through at least 2019. It is not available on the Ministry of Defense website in mid-2022.

³⁸ See, for example: Central Intelligence Agency, *The Soviet Soldier in Afghanistan: Morale and Discipline Problems*, declassified intelligence report, Directorate of Intelligence, September 1985; Central Intelligence Agency, *Capabilities of Soviet General Purpose Forces*, National Intelligence Estimate 11-14-65, declassified intelligence report, Director of Central Intelligence and the United States Intelligence Board, 1965.

³⁹ *Viet Cong* was a Republic of Vietnam term used to denigrate the southern anti-government movement. The broader political movement is often referred to as the National Liberation Front or the Provisional Revolutionary Government, and the armed forces are often referred to as the People's Liberation Armed Forces (PLAF) or the Liberation Army of South Vietnam. Thousands of these declassified reports are available in the hard-copy archives at the U.S. Army Center of Military History at Fort McNair, Washington, D.C., and many others are available online through the Texas Tech University Vietnam War

digital archive. I obtained over 300 reports relevant to PAVN and “Viet Cong” will to fight and general combat effectiveness in Binh Dinh and Phu Yen provinces (Military Region 5), including reports entitled, “Poor Troop Morale of the 12th Regiment, 3rd NVA Division, Military Region 5,” a report on an internal Viet Cong unit meeting with notes on discipline entitled, “Criteria to be Followed by the 4th Battalion 12th Main Force Regiment, VC Military Region 5,” and a national-level CIA analysis entitled, “The Attitudes of North Vietnamese Leaders Towards Fighting and Negotiating.”

⁴⁰ Sherman Kent, *Words of Estimative Probability*, Central Intelligence Agency, declassified report, Langley, Vir.: Directorate of Intelligence, 1964.

⁴¹ This updated assessment is derived from: Connable, *Lawfare*, March 4, 2022.

⁴² I was unable to find examples of this theory applied to state military forces, so this notional description may not faithfully reflect the intent of the model’s authors. See: Scott Atran, “The Devoted Actor,” *Current Anthropology*, Vol. 57, No. S13, June 2016, pp. S192-S203; Hammad Sheikh, Angel Gomez, and Scott Atran, “Empirical Evidence for the Devoted Actor Model,” *Current Anthropology*, Vol. 57, No. S13, June 2016, pp. S204-S209; Scott Atran, “The Will to Fight,” *Science*, Vol. 373, No. 6559, September 2021, p. 1063.

⁴³ Connable, et al., RAND, 2018, Chapter 3, pp. 125-135, et al.

⁴⁴ Ben Connable, “Authentically Describing and Forecasting Human Behavior for Policy Analysis: A Review and Path Forward,” in: Aaron B. Frank and Elizabeth M. Bartels, *Adaptive Engagement for Undergoverned Spaces*, Santa Monica, Calif.: RAND Corporation, 2022, Chapter 15.

⁴⁵ Connable, et al., RAND, 2018, p. 146.