Towards a Theory of Military Exercises

Implications for Warfighting Potential

by Johan Norberg

Abstract

Denna artikel föreslår en ansats för att analysera vad militära övningar betyder för deltagande styrkors krigföringspotential innan ett krig har brutit ut, även om skillnaderna mellan krig och övning begränsar möjliga slutsatser. Ett ramverk för att analysera militära övningars natur, egenskaper och implikationer utgör grunden för en illustrerande analogi om en militär styrka som en mänsklig kropp med hjärna (ledning) och muskler (förband). Övningar illustrerar krigföringspotential, styrkor som en stat faktiskt kan få ut i fält, om hjärna och muskler tränar samtidigt samt om ledningsambition och mängden deltagande förband motsvarar varandra.

THIS ARTICLE PROPOSES an approach to analysing what military exercises can tell us about the warfighting potential of the participating military forces and, by implication, of the military tools available to a given state at a particular time. The research puzzle is how to explain, from the perspective of social science, military exercises as societal phenomena and, specifically, what they mean for a force's ability to fight wars. The key argument is that military exercises are a good way to understand warfighting potential in peacetime, but that the fundamental differences between war and exercises limit which inferences are possible to make.

On 24 February 2022, Russia expanded the war it had been conducting since 2014 in Ukraine's Donbas region into the biggest warfighting operation in Europe since 1945 (hereafter only Russia's war against Ukraine). Russia's decision underlined the importance of national power, in general, and hard military power, in particular, as well as the challenges in assessing them correctly. Appraisals of national power often rely on readily quantifiable variables, such as industry, population, or GDP.[1]

There are at least four ways, each with certain drawbacks, to gauge the military power[2] of states or alliances. First, as mentioned, the use of direct quantitative comparisons of forces; numbers of pieces of equipment; or the size of defence budgets, GDP, and industry; is common,[3] but fail to capture both the qualitative differences, such as in the level of the skills of the forces involved, and the geographic, temporal and, crucially, the interactive and destructive aspects of war.[4]

In contrast, the second way, conducting war games, addresses the interactive nature of war. The term war games can mean two things, either a table top simulation of battle or two-sided major exercises (i e, the biggest military exercises of a state or alliance, in

a certain period, usually a year also often called manoeuvres), with the latter being more relevant in relation to warfighting potential. No amount of maps, scenarios, tables of organisations and equipment, and so on, however, can fully capture war's complexity, unpredictability and lethality. In addition, both quantitative comparisons and war games are abstractions and, importantly, do not address the intangible factors that affect force performance in war, such as morale, training levels and leadership fully.[5] War is brutally concrete. A third way is to observe the performance of real operations, past and present, although each operation (and war) is unique, which makes generalisations, let alone predictions, hard. A fourth way is to analyse military exercises, which can be seen as a last step in a chain that brings together all of the components such as investments in equipment and personnel that underpin a state's military power, before it is used in war.

Does anybody need to care? The proposed approach to analysing military exercises and warfighting potential may help scholars in both the study of international relations (IR), strategic studies and war studies. In IR theory, military force is but one of many tools that states have, but often described in abstract, aggregated terms, such as equipment holdings, defence budgets, or industrial capacity, which outline resources needed to create a military force, but do not automatically predict how it will perform in war. The approach here offers IR scholars a more dynamic view of the creation of military force and its tentative use, in terms of demonstrably deployable forces. This indicates warfighting potential and signals military prowess. For researchers who study war and strategy, the empirical material is often about the wars that have been fought. This article proposes an approach to addressing, *before* a war has started, what a military force can do in war. This approach may also be useful for policymakers and military analysts. Does any of this matter? If both practitioners and scholars in these three disciplines find the approach useful, it may also serve as a way for them to create a better common understanding of how to assess warfighting potential and the military tools at a state's disposal.

Aim and approach

This article's overall aim is to contribute to the understanding of military power writ large and, more specifically, what military exercises mean for the warfighting potential of a state's armed forces. This article proposes an analytical approach with two interlinked frameworks. The first, an analytical framework for military exercises, underpins the second, which is about assessing warfighting potential. Admittedly, a limitation of the article is that since it does not apply the proposed analytical approach to empirical material it is difficult for it to evaluate its added explanatory value. The plan is thus to follow up this mainly theoretical article with an empirical analysis that compares the military exercises of two major military powers, as well as an analysis of how exercise-based assessment of the pre-2022 warfighting potential of Russia's Armed Forces relates to its performance in the first year of the war in Ukraine.[6] A first step is to address military exercises more generally.

There are three reasons to propose a framework for analysing military exercises. First, while often studied and clearly important to an understanding of military capability, the research field of military exercises is simultaneously undertheorized for achieving another of its objectives, which is to help to explain what military exercises are. For this purpose, descriptive accounts of exercises, or

research attempts to analyse the link between exercises and warfighting potential, are neither rigorous enough, nor able to support generalisable observations, let alone predictions.[7] Second, on an intuitive level, military exercises say something about warfighting potential. Theoretical and methodological problems abound when assessing prospective force performance in war.[8] There does not appear to be a universally agreed definition of how to describe, let alone measure, peacetime warfighting potential. The dictum of the Russian 18th-century field marshal, Suvorov, "Train hard, fight easy,"[9] points to an obvious link between military exercises and warfighting. Third, it may appear odd to dwell on military exercises in the midst of Russia's war against Ukraine, but it is arguably useful in three ways. Although the focus here is military exercises in peacetime, in wartime they are also part of the process to replace losses at the front. Someday, the war will end, and Russian military exercises will resume and be of interest to those who assess Russia's warfighting potential. Finally, other states and alliances continue to carry out military exercises unabatedly.

This article's overarching research question is: "What do military exercises tell us about a force's warfighting potential?" This research question in turn entails the defining of two concepts: (i) military exercises and (ii) warfighting potential. It also calls for the proposal of a model to link the concepts together, to explore what the first says and does not say about the latter.

Why study military exercises?

For scholars, the key reason to study military exercises is that there is less comprehensive research on the topic, both in terms of theory and empirical studies, than on other aspects of war. Policymakers have even more reason to be interested. States often express concern with other states' military exercises. Russia saw NATO's 2018 Trident Juncture exercise in Norway as offensive and a reason to pursue military modernisation.[10] In April 2021, a major Russian out-of-season exercise near Ukraine[11] prompted media speculation on whether Russia was about to invade deeper into the country. More generally, no one is born a soldier. All military forces train their personnel individually and collectively.[12] Military exercises demonstrate a force's ability to deploy ground, air and naval forces, as well as each service's constituent arms and how they cooperate, i e, an *antebellum* indication of warfighting potential. Waiting to find out an adversary's actual capabilities in war is arguably a questionable approach in both policy and research. Demonstrably deployable forces indicate a state's "capability intent," i e, the scale and scope of operations it wants its forces to be able to carry out.[13] Exercises may reveal new equipment or procedures not in use in current operations.

Exercises are a part of military statecraft, a state's use of military means to achieve foreign policy goals. Broadly speaking, states employ military means in two ways: directly, to attack other states; indirectly, through threats to deploy forces to intimidate, bluff, deter, or coerce them. Conversely, allies use military force indirectly to reassure each other or directly to defend each other against external aggression. Exercises are an indirect use of military means, to threaten and deter rivals, or reassure allies. A less-discussed aspect is that exercises are about preparing military forces for war, the direct application of military means. Exercises are a peacetime expression of a military force's warfighting potential in terms of demonstrably deployable units and formations. Studying exercises facilitates assessing a state's military forces

both for direct and indirect use. A common research approach is to consider exercises as a form of political messaging, and emphasises political intent, interpretations, and the consequences of exercises.

Military exercises may herald war, when interstate tensions are high. In 1973, Egypt carried out a series of exercises before attacking Israel. Iraqi exercises concealed surprise attacks on Iran, in 1980, and Kuwait, in 1990.[14] In February 2014, a large-scale combat readiness test of Russian forces north and east of Ukraine was a ruse for Moscow's operation to seize Crimea in the south.[15] In January 2022, according to US estimates, Russia concentrated some 175,000 troops near Ukraine. Moscow claimed they were on exercise.[16]

Before addressing what exercises really are and how to study and understand them, it is reasonable to ponder the differences between military exercises and the actual conduct of war, to discern a limit to what exercises infer about the ability of a force to fight wars. Exercises are about war, but are not war. Warfighting is complex, a myriad of interdependent, but independently evolving, potentially lethal events and actions. Exercises are simplified, often unilateral non-lethal simulations. Wars are interactive. Two-sided exercises enable training against a thinking and independently acting adversary intent on thwarting your actions, but hardly nor fully emulate the actual dangers and stresses of war.

War is about organised violent resolution of conflicting wills between two actors. Exercises are not this, especially not exercises in a purely national framework. Similarly, when allied and partner nations exercise together it is about cooperation, not conflicting wills. States conduct exercises to organise the violence to uphold the will that war tests. Warfighting is about life or death for the forces involved and potentially also for their nations. Exercises, excluding accidents, are not. Put differently, in exercises, no one shoots back to kill you. In a sense, wars consume military capabilities. Exercises build them. Wars are always case-specific in terms of participating forces, time, place and adversary. In contrast, exercises develop general, functional capabilities applicable in different combinations in different wars.

In peacetime, governments have spending alternatives other than exercises. Reducing the size and scope of exercises is often a way to save money, especially since much of defence spending tends to be tied to long-term commitments. In war, costs matter less, since state survival can be at stake. Wars can last a long time. Exercises have time limits, partly due to costs, partly due to needs to deploy forces elsewhere. Wars can spread with the evolving fortunes of war and geography. Exercises are limited in space, i e, bound to exercise areas, since the potentially destructive effects of combat training, such as live-fire exercises, must not affect society. Warfighting invariably means physical destruction in society. Thus, exercises cannot predict exact warfighting capabilities in war, but they are a proxy for the potential to engage in warfighting at a certain scale and scope. How well peacetime military exercises portend actual force performance in war requires studying both how a force exercises and how it fights. Such empirical work, however, requires an analytical framework to be able to proceed beyond merely accounting for events. Before proceeding to an outline of such a framework (in Section 6, below), the next section discusses terminology, limitations, assumptions and sources, while the ensuing section, Section 5, provides a brief research overview.

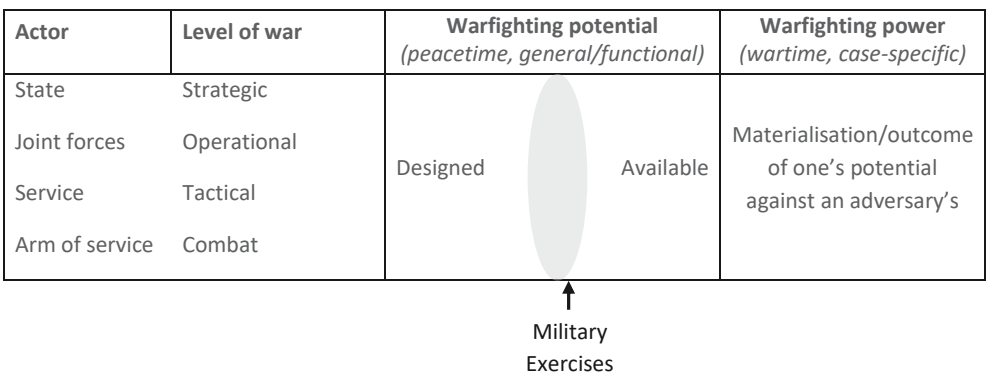
Terminology, limitations, assumptions, sources

The concept of the military capability of a state is common. In dictionaries, "capability," that is, being capable, implies the ability to do something.[17] In state security contexts, military capability often denotes a state's collected policies, plans and resources for building and maintaining military forces (including non-military assets, such as economic, scientific and industrial bases),[18] but sometimes also comprises what a military force can do, could potentially do, or should be able to do, in terms of warfighting.[19] A military force can be very capable in one context, however, but not in another. Russia's Armed Forces swiftly occupied Crimea in 2014. Eight well-financed years later, the same Russian Armed Forces floundered in their first year of war against Ukraine. What a military force can *actually* do is thus context-dependent regarding time, geography and, crucially, adversary. When used in a general sense, it is inherently unclear whether capability pertains to something that has happened, or a hypothetical future case. Hence, capability only appears here as part of the term capability intent (see Section 6).

Figure 1 is a simplified graphical illustration[20] of terms used in this article. The headings in the top row outline actors, levels of war and how peacetime warfighting potential materialises into wartime power. The first two columns from the left, actor and level of war, relate to each other. On the top, strategic level, states decide politically how to build, maintain and use armed forces. Below that level are joint forces (services), which provide operational-level peacetime potential and wartime power; single services provide tactical potential that is materialised in wartime tactical power; finally, the peacetime combat potential of each arm of service materialises in war as combat power.

A key part of military exercises is to build forces with general functions (e.g., command and control, or C2;[21] manoeuvre; fire support; mobility and sustainability) for combat operations in *specific contexts* (wars). In other words, exercises build a general warfighting potential, whereas wars are about employing that potential in certain cases. Hence, the terms that are appropriate here for the results of military exercises are operational, tactical or combat-level warfighting potential of joint forces, services and arms of service, respectively.

Figure 1: An overview of actors, levels, potential, power and military exercises



In the middle column, two types of warfighting potential address potential force performance in war. First, designed warfighting potential emanates from a unit's nominal organisation, equipment and personnel. Second, available warfighting potential is the often lesser resource a commander disposes on the eve of combat. Military exercises are a transitory step from designed to available warfighting potential, as illustrated by the grey shaded area between them in Figure 1. This does not mean that exercises reduce warfighting potential, quite the contrary. Rather, in most units, some equipment is always broken; someone is always on leave or ill. The last factor, warfighting power,[22] in the right column, points to the effect of a materialising potential depending on adversary, time and place of the fight. When the available warfighting potential materialises, it becomes warfighting power, i e, what the force actually can do in terms of how well it accomplishes assigned missions in a specific context. In short, power is the same as outcome, on all levels, from strategic down to combat.

In sum, operational/tactical/combat potential pertains to the general scale and scope of warfighting actions a force prepares in peacetime through military exercises. The corresponding power is how the ability to carry out those actions materialises as outcomes in war. Studying military exercises enables us to gauge potential; gauging power requires studying war.

This article's approach has three delimitations. First, it addresses exercises for states' conventional forces (ground, air and naval forces), since these make up the bulk of military forces, which omits exercises of paramilitary forces, nuclear forces, or private military companies. Second, the focus is on major exercises, which arguably illustrate the highest level of warfighting potential.[23] Dealing with *all* exercises of a military force is cumbersome and unnecessary – one does not need to examine each stone to see the size and shape of a pyramid. Similarly, the training of individual soldier and sailor skills, while arguably a key component of a functioning military force, are outside the scope of this article since exercises are about collective military training. The third delimitation is political aspects. One example of the political dimension of exercises is that especially major exercises often prompt media coverage and political comments. Another example is the role of exercises in arms control and confidence and security building measures. For example, the OSCE[24] Vienna Document stipulates that a participating state should invite observers from other states to its exercises in order to reduce potential uncertainties on other countries regarding exercise's scale, scope and purpose. This aspect is not subject to further analysis here, but is a possible avenue for further research about military exercises. This article emphasises what exercises mean for warfighting potential. Additional minor delimitations appear throughout.

All military forces in the world train and conduct exercises. A reasonable assumption, therefore, is that exercises are necessary to prepare warfighting potential and are a peacetime indication of its extent. Another assumption is that the stated level of an exercise, strategic, operational, or tactical, corresponds to the level of operation the exercise prepares forces for. The question is to what extent exercises actually do that.

The point of departure for this article is research about both military exercises as well as the creation and use of Russia's Armed Forces. In addition, two types of sources are relied on. The first is that of books, articles in scientific journals, and reports from think tanks and other research institutions;

these underpin the research overview and the more theoretical sections. The second type of source involved interviews and e-mail exchanges with a retired US general and a Swedish Army colonel. Both provided key insights from the perspective of senior practitioners.

Research overview

This section outlines research on military exercises to find gaps in scholarship and to provide a context for the proposed framework for analysing military exercises and warfighting potential. There are two apparent gaps in the literature. The first is that there is no theory that appears to put military exercises at its core, although it is at least indirectly possible to relate other social science theories, e.g., about organisational learning, military affairs, or international relations, to military exercises. The other is that there is no established framework to analyse what military exercises tell us about a force's warfighting potential. Broadly speaking, research on military exercises is of three types. The first has an ambition to make general observations. The second entails attempts to use exercises to gauge warfighting potential. The third type is a residual and has an empirical descriptive approach to exercises or their consequences in other fields than military and political affairs. The focus here is on the first two.

The first type of research's general observations about exercises underpin three observations, as follows. Exercises have (i) political and military dimensions,[25] and are about (ii) collective military training, and (iii) how states prepare for war. [26] The most systematic approach known to this author explains differences between field training exercises, command post exercises, and tabletop exercises. A five-grade scale outlines their force volume, complexity (scale and scope), "virtuality" (how realistic an exercise is), reiteration (routine or occasional), and interoperability between allies and services (both of which in turn brace interoperability). The framework supports comparisons between the three types of exercises and illustrates well how priorities regarding the training audience affect the results of the exercise,[27] although it neither explores this in detail nor elaborates what it means for the ability to fight wars.

The apparently only book in English purely dedicated solely to exercises, *Military Exercises: Political messaging and strategic impact,*[28] an anthology from 2018, stresses the military and political dimensions of exercises as expressions of capabilities and the intentions of states or alliances.[29] Exercises have tactical-technical and strategic-political roles. The former is about training forces and staffs to generate and preserve skills and to experiment and test new technologies, structures and procedures. The latter reassures allies, supports defence reform, standardisation and diplomacy, deters adversaries and prepares for war. The authors note, without specifying how, that one can gauge exercises for indications about capabilities of forces.[30] That ideally requires access to evaluation reports from exercises and to the impressions of key participants, neither of which are often available publicly. Many see exercises as political signals to allies, potential adversaries and their own populations, but rarely explain how target audiences may make different interpretations; an adversary may confuse restraint with lack of resolve. Exercises can escalate tensions, especially in regions without multilateral arms control regimes, e.g., the Korean peninsula.[31] Russian exercises in 2021 and 2022 before the expanded war in Ukraine showed that arms control regimes unfortu-

nately do not guarantee to prevent neither tensions nor war.

Military exercises are military training practice at all levels that build interoperability and mirror priorities for operations and capabilities.[32] Exercises are essential for combat readiness and enable commanders and forces to build warfighting skills. Exercises allow for testing new concepts, doctrine, tactics and technologies. Mistakes in exercises are a way for personnel to learn and test their own skills in more forgiving circumstances than war. Training for war through exercises is arguably also an act of deterrence in and of itself.[33]

Regarding war preparations, exercises and military training have throughout history evolved from primarily individual and experience-oriented techniques to collective training, in terms of tactical and operational practices. The Cold War also saw exercises with cognitive emphasis, such as war games for analysing adversaries, or geography, or to test plans and methods. The relation between exercises and warfighting is visible in that forces, ideally, fight as they train and that learning from one war often affects exercises as a way to prepare for the next.[34] How a force fights, however, may change if the war takes time. If the war grinds down the adversaries' respective initial forces, mobilised reserves may have experienced fewer exercises before deploying and are thus less capable.

War games are simulations of war, including its quintessential element of fighting, but separate from war's reality. Exercises can be one-sided: a force "fights" a fictional enemy. In contrast, war games have two interacting forces, real, or fictional, or a mix of both.[35] Historically, war games have served as religious rituals to honour God, or to show his will in terms of who wins; as entertainment; as settlements of disputes; or war preparations. The last-named is in focus here. One example is large-scale, two-sided exercises, with both staffs and forces in the field, the latter subjected to simulations of some of the hardships of war. Both war and war games include chance, physical strength and strategy, the latter in terms of interacting with an independently thinking adversary who acts to thwart your plans. War games allow both C2, the military brain, to train to plan, prepare and strategise war; as well as the forces, the military muscles, to train for combat, and the tactics of war, against an independently acting notional adversary, *simultaneously*. The limitations of war games (and exercises), in contrast to war, are comprised of the isolation of cause and effect through artificial limits in time, space, conduct, equipment and end state. War games have rules. In wars, breaking rules may help winning.[36]

In short, research about military exercises that has an ambition to make general observations notes the political and military dimensions of exercises as well as their various functions, formats and applications, but does not help to explain what exercises mean beyond that what are.

The second type of research on military exercises uses them to assess warfighting potential.[37] An example is a report that analyses NATO exercises in 2014–2019, in terms of functions outlined in the 2016 Swedish Military Strategic Doctrine: command, control and intelligence, fires, mobility, protection, logistics and the scale and scope of the exercise. Exercises in a NATO context indicated increasing warfighting potential, but also revealed problems, such as diverging interests between member states, the limited size of most exercises and the scarcity of combat-readiness checks.[38] Three reports address Russian military exercises in 2009–2021,[39] with a focus on warfighting poten-

tial based on Russian concepts of a state's military power and the combat power of its armed forces, i e, their ability to carry out their assigned missions. The first report concluded that the exercises of Russia's Armed Forces in 2011–2014 were preparations to start and fight large-scale joint inter-service operations, that is, to launch and wage interstate wars.[40] The second report concluded that Russian exercises were preparations to handle the whole spectrum of military conflicts, from smaller armed conflicts to large-scale war, and that Russia could launch strategic-level operations in potential war theatres along its borders within 2–4 weeks.[41] The third report developed the analytical approach and extended the timeline of exercises covered to 2021, and reaffirmed the conclusions of the previous two.[42]

The third type of research on military exercises has a topical, empirical, or descriptive approach. One example is many of the chapters in *Military Exercises: Political messaging and strategic impact* that address exercises in specific contexts, such as NATO during and after the Cold War, national approaches in Norway, Austria, China, Greece and Russia, the Middle East and India-Pakistan.[43] Since this article focuses on exercises and warfighting potential, this overview does not account for research about aspects of military exercises such as historical cases, force transformation, security cooperation, diplomacy, organisational or individual learning, exercise realism, or effects on human health or the environment.

In short, to the knowledge of this author, no previous research on military exercises, be it with an ambition to make general observations, with an empirical slant, or with a focus on assessing what they imply for potential performance in war, has elaborated a theory to explain what they are and what they mean. Similarly, research relating military exercises to warfighting potential is at an initial stage; no research has compared the exercises of two actors in order to enable a discussion of their relative warfighting potential, except that based on pure numbers.

A framework to analyse military exercises

This analytical framework for military exercises has two ambitions. The first is to help explain and contextualise military exercises, but without making a comprehensive model covering every aspect, or every exercise, elaborate causality, or enabling predictions. The framework categorises various aspects of military exercises and provides a taxonomy to describe and differentiate them. Second, the framework buttresses an assessment of warfighting potential.

As figure 2 outlines below, the framework has three main parts: the nature of exercises, their characteristics, and implications. The *nature* of exercises pertains to factors that military exercises always entail. *Characteristics,* the case-specific features of each exercise and allow us to distinguish it from others. Their nature and characteristics pertain to the exercises as such and build on works on military theory,[44] as well as observations from years of research on exercises. The characteristics of a military exercise underpin its political and military *implications,* which in turn explain what they mean in a wider context and to different observers. Both characteristics and implications distinguish one exercise from another.

The permanent nature of military exercises is that they are always about state-organised collective military training (the green section in Figure 2) and, as such, political-military measures.[45] States have the main agency in building and using military forces. True, guerrilla forces, terrorist organ-

Figure 2: A proposed theory of military exercises

NATURE					
State-organised collective military training					
CHARACTERISTICS					
Purpose	Level of war	Participation	Scale (#)	Scope	Misc.
Preparation for war	Strategic	Allies/partners	Servicemen	C2	Duration
Preparation for OOTW	Operational	Service/s	Equipment	Forces	Place
Readiness	Tactical	Arms		Format	Robustness
Political – diplomatic	Combat	Units			
Political – other					
IMPLICATIONS					
Political			Military		
Deterrence	Diversion	Incarnation of fighting potential		Forces' interoperability	
Reassurance	Escalation	Capability intent		Force transformation	
Coercion		Force maintenance			

Abbreviations: C2 – command and control; Misc. – miscellaneous; OOTW – operations other than war; # – number of.

isations and private military companies also conduct collective military training, but on a much smaller scale and scope than states. Exercises are collective in that many people are involved and are military in character since armed forces organise them and they pertain to skills for warfighting. The training aspect pertains to developing, testing, learning, applying, and maintaining such skills, for example in terms of the procedures and routines for combat, C2, and logistics. The nature of exercises is a constant that underpins the rest of the framework, but has little further explanatory value in itself, since it is valid for all exercises.

Characteristics, in contrast to the permanent nature of military exercises (the orange field in Figure 2) are transient, in that they change from exercise to exercise. There are six categories of characteristics. The first is the purpose of an exercise, of which there are five types. The first type of purpose is to prepare forces for their unique task, warfighting, e.g., combat training, combat readiness checks, evaluations to check training levels, experiments on or tests of new equipment, and procedures. Second, in exercises that prepare for operations other than war (OOTW), e.g., peacekeeping, the task of warfighting is not in focus, although the combat potential of units serves as both force protection and deterrence in such operations.[46] Third, exercises can test forces' readiness, i e, the relation between available time and needed capability.[47] Fourth, some international exercises downplay warfighting capabilities, but signal political-diplomatic cooperation and trust between the countries involved. Fifth, states may have other political aims with exercises, e.g., deterrence, coercion, reassurance, diversion, or escalation, but rarely say so explicitly.

The second category of characteristics is levels of warfare (strategic, operational, and tactical) as noted in military theory.[48] This pertains to those exercises that prepare for war, but not OOTW. The level of combat below the tactical enables including unit-level exercises in the framework. The third category is participation, i e, participating nations

as well as services. Exercises can be national or with allies or partner nations. The combination of participating services, such as ground, air or naval forces, shows the ambition, in terms of what type of operation the exercise is about. This article does not elaborate sub-categorisations in single-service exercises, participating arms, single or combined, or unit level.

In characteristics category four, the numbers of servicemen and equipment in the exercise pertains to the warfighting potential that the exercise underpins and thus also the credibility of any political message it entails, be it to reassure allies or deter adversaries. For example, a strategic-level exercise pertains to warfighting operations across parts of a continent with ground, air and naval forces. If such an exercise includes a tank, a ship and an aircraft, it is in a sense inter-service, but hardly a meaningful preparation for strategic level warfighting. Stated and actual numbers probably often differ, but are impossible to verify independently through open sources. It is cheaper to *say* that you are conducting an exercise with 100,000 men than to actually do it. Such shenanigans mean taking a risk when war actually comes. Russia stated impressive numbers in major exercises up to 2021, but had severe problems to deploy and sustain similar numbers in the Ukraine war. Stated numbers impress credibility in the eyes of others. True numbers matter for warfighting potential.

The fifth category of exercise characteristics, scope, has three aspects: C2, forces and format. The first aspect, C2, i e, commanders, staffs and their support unit. Put simply, forces train combat, C2 train tactics or operational art. To train commanders to think, a key influence is to exercise command in peace or war, the latter being a more direct influence. In peacetime, *inter alia*, field trips, planning games and war games and, crucially in this context, exercises, shape commanders' thinking, but more indirectly.[49] It is possible to exercise C2 with notional units represented in the field. In contrast, training large forces without C2 means training individual soldiers, but not units and forces. Thus, the second aspect, forces, roughly corresponds to the scale of the exercise; it is important for exercise scope in that it links C2 and forces together. In this context, the third aspect, format, addresses how military establishments carry out exercises, e.g., drills for standardised routines for units, oral tabletop exercises, or two-sided war games for C2.[50]

Finally, the sixth category is a residual for what does not fit into the other five. All military activities, including exercises, have a duration and a location.[51] The terrain and duration of exercises are proxies for where and how long a force could fight, but with caveats. Forces operate mainly in exercise areas in peacetime for obvious reasons, but not in war. Large exercises with forces usually last a week or two, but wars can go on for years, even a century. A possible rule of thumb for ground forces can be that after two weeks an exercise tests field logistics rather than just base logistics.

A key aspect of an exercise is its robustness, i e how realistically it simulates the pressures of war for the training audience.[52] Retired general Ben Hodges, former commander of US Army Europe, notes that one aim of major US exercises is to push commanders and participating forces so hard as to test the norms and limits of the system. How do commanders react when plans fail, as they often do in war?[53] It is also important to push exercise logistics beyond the breaking point, since the norm that logistics are adequate, in place, and on time is rare in war. There are, however, distractions. Exercise organisers often put energy and resources into a

distinguished visitors' day, where the military can show achievements and readiness to stakeholders. [54] Some states sometimes omit overly challenging aspects or focus exercises on only parts of warfare, which may lead to insufficient or erroneous learning.[55] The opposite of exercise robustness is a parade, for want of a better word, i e, scripted movements of forces and well-advertised, large, live-fire episodes. The performance of Russia's Armed Forces in Ukraine in 2022 begs the question to what extent displaying military power was more important in Russia's annual strategic exercises than building it was.[56]

In sum, the characteristics of military exercises are transient. Each exercise has a unique set of features that separates it from other exercises. What do all the characteristics mean in a wider context? What are their implications?

Based on the observation that exercises are political-military measures, the implications of military exercises come in two broad categories: political and military (the blue field in Figure 2).[57] The implications proposed here build on an inductive approach over years of empirical work and observations of political and analytical comments about exercises.

The first category, the political implications of an exercise, is about the eye of the beholder. An exercise in an alliance reassures alliance members, but also deters potential adversaries. For example, a NATO exercise with US participation may deter Russia, currently a political and potential military adversary, from attacking NATO countries. The same NATO exercise also serves to reassure NATO allies. The characteristic political aims differ from political implications. The former pertains to the organising state or alliance. The latter pertains to how other states perceive and react to an exercise. If a major state organises a big exercise in times of political, state tensions with smaller neighbours, the exercise arguably escalates tensions, or even constitutes a ruse or prelude to war. It is understandable if the smaller states feel coerced to make concessions they may not want.

Category number two, military implications, addresses what exercises mean for a force's warfighting potential. Exercises are in a sense an incarnation of peacetime warfighting potential, in terms of the scale and scope of a force that a state can demonstrably field for war. Many states have reserves earmarked for mobilisation, but such plans remain hypothetical until tested in wartime conditions, which limits their value for gauging warfighting potential in peacetime.

Assessing capability intent[58] rests on the assumption that a force can do in war what it has trained in peacetime. The term capability intent means the ambition in terms of the minimum scale and scope of war that a state actually wants its forces to be able to fight. If a state has three divisions in reserves that never go on exercise, but exercises one brigade, the capability intent is to be able to fight with one brigade. Capability intent helps to assess the force that a state can demonstrably have available at the outset of war. Exercises say little, however, about a state's ability to mobilise resources to handle the changing fortunes of an actual war.

Force maintenance points to the scale and scope of warfighting potential that a state's exercises uphold over many years, i e capability intent over time. If exercises with 100,000 participants take place seldom, but those with 10,000 are frequent, the maintained level of warfighting potential over time is arguably closer to 10,000 than 100,000. Finally, exercises underpin force transformation, a process that takes place in all military forces (or else they would all

still be riding horses and using bows and arrows). Exercises also serve to test new weapons, organisation structures, procedures and tactics before they are sent to war.

To sum up the framework, military exercises have political and military dimensions. Their permanent nature is state-organised collective military training. Their characteristics enable an observer to distinguish them from one another. Exercises have political and military implications according to what they mean to different observers. The difference between military exercises and war limits possible conclusions about warfighting potential. So, how may the framework underpin assessments of warfighting potential?

A framework to illustrate warfighting potential

This section focuses on the military implications, i e the bottom right set of implications in Figure 2 above. Which characteristics are relevant to underpin a framework for assessing warfighting potential? The approach here is to let the analogy of a military force as a human body guide a selection of factors.

The simile of a military force as a human body is old. The Prussian general and military theorist, Carl von Clausewitz, likened war to a duel on an extensive scale, best understood as two wrestlers, each trying to compel the other to succumb to his will.[59] Boris Shaposhnikov, chief of the Soviet General Staff in 1941–42, saw the General Staff as the brain of the army.[60] A military force and its ability to act resembles a body with a brain (commander and supporting staff), muscles (the military forces), the skeleton (military bases)[61] and a nervous system (C2 support structures) that enables the brain to coordinate the actions of the body. The ability to make all limbs (arms, services, forces) work together represents the military body's warfighting potential. Military exercises breathe life into the body.[62] Exercises are the military body's gym sessions, to strengthen limbs and muscles. Analogies are imperfect and their flaws may mislead,[63] but they can help to explain a complex reality. The body analogy helps illustrate key aspects of how military force prepares to fight wars in what may appear as a myriad of interrelated but independently moving factors. It may also stimulate new ways of thinking about military force.

The apogee of warfighting potential for conventional forces is to be able to handle joint inter-service operations in wars between military great powers. Building on the analogy, it is the military body's ability to do deadlifts, a type of lift where the weight or barbell is lifted off the ground until the lifter stands straight.[64] This requires strength in all limbs and muscles and good coordination. Illustrating the deadlift based on the framework for analysing military exercises requires selecting some factors from the characteristics section, the orange field in Figure 2. This underpins the proposed framework for assessing warfighting potential in terms of the simultaneous and integrated training of four parts: (i) brain and nervous system (hereafter only called brain for brevity), (ii) muscles and , (iii) digestion and circulation and, finally, (iv) the time it takes for the body to be able to do the deadlift, all outlined in Figure 3.

The key set of factors to help illustrate how military exercises develop the brain of the military body, C2,[65] is represented by the level of war, which addresses the highest level of operational complexity of the exercises in question. This encompasses a major exercise's officially-stated level of war as well as the participation of allies, services and arms. The underlying assumption is that the higher the level and the wider the

Figure 3: A framework for warfighting potential based on military exercises

Analogy of a military force as a human body training for the deadlift		
Body parts	*Corresponding components in an exercise*	
Brain	C2 – Level of war C2 – Participation: allies and partners C2 – Participation: services and arms of service	
Muscles	Number of	Servicemen
		Pieces of ground equipment
		Aircraft
		Ships
Time	Combat readiness checks	

Abbreviations: C2 - command and control

participation, the more parts C2 has to coordinate. A strategic or operational level exercise has more parts for C2 to coordinate than a tactical exercise and requires more from the brain and nervous system of the military body.

Scale is the key set of factors to assess the muscles the military body trains in an exercise, more specifically the stated sum of exercise participants and pieces of equipment[66] for each of the three main services. These numbers address neither the quality of the training, how it affects the skills of participants, nor how robust the organisational structures are. Empirical research suggests that the stated numbers of participating soldiers and pieces of equipment in an exercise are often unspecific and probably also skewed.[67] Secrecy about specifics is common among military establishments, as is deception. Academic research has to make do with what is publicly available.

Exercises often have C2 training at one level, but only of parts of the muscles, i e, the forces are not fully commensurate with the stated C2 level. Using the analogy, there are two possible explanations for why the brain is disproportionally bigger than the body. First, C2 is a priority. The military body needs a functional brain and nervous system to work, but can do without some muscles, which probably also reflects the available combat potential of a force that a commander disposes at the outset of war. Second, training C2 can be achieved sufficiently well with some of the forces represented by small teams.

Only the *simultaneous* combination of brain and muscles underpins the body's full potential to fight. To elaborate, an operational-level command post exercise (CPX) for C2, but without the corresponding forces, however, mainly trains the brain of the military body, but less of its muscles. After a CPX, the military body will be better at appraising an adversary, planning its own actions and coordinating them, but not at actually carrying them out, since its muscles have not trained equally much. Preparing for war, i e, through a large-scale operational-level exercise (or above), requires training all parts of the military body. In reality, military forces often train the military body in smaller parts and bring them all together

more rarely. In other words, the warfighting potential of the military body at a given time is never greater than the muscles trained in exercises, no matter how big the brain is.

As noted above, military readiness is the relation between available time and needed capability. The time it takes for a force to start combat operations in a war affects how well it can seize the initiative against an adversary or wrench it from him. If the military exercises studied here are about fighting wars, then combat readiness checks, also called snap exercises, are about the process of going to war, in terms of bringing forces from peacetime activities in garrisons into a war theatre. When a combat readiness check directly precedes an exercise, training how to go to and then fight a war merge into one coherent process. This reflects the ability to bring forces to theatre quickly and then fight better than if the two types of exercises take place separately.

Concluding observations and further research

There are two key observations about military exercises. First: no exercises, no warfighting potential. Exercises are costly and provide few tangible benefits except for the forces involved. Governments wary of re-election may prefer to use defence budgets to place orders with the defence industry that stimulate job creation and, probably, votes. Exercises, however, are arguably the only way to test whether the investments a state has made in military power can come together as a coherent whole in peacetime. The state also has a moral obligation to train as well as possible those whom it expects to be ready to die in combat.

Second, regarding assessment of the warfighting potential of eventual adversaries, military exercises are but one, albeit crucial, aspect among others, such as the sizes of the military establishments, the geography and the doctrine. Warfighting potential only stems from exercises where force participation is commensurate with C2 ambition and where brain and muscles work together simultaneously. Exercises thus indicate how well a state lives up to its stated capability intent, that is, how well military political *talk* is underpinned by military exercises *walk*. Russia apparently cheated on this before 2022 and found out the hard way in Ukraine that war has little tolerance for exercise cheaters.

This article explains the core nature of military exercises, collective military training, and transient characteristics, as well as their implications in a wider context. A selection of characteristics of exercises underpins a framework to assess operational level warfighting potential. This overall approach is in need of development in at least five areas. The first is the need for an empirical application of the frameworks. Lessons from such analysis can inform both development of theory and method; they can also support analyses of the military exercises of other forces. Second, this proposed framework for analysing warfighting potential misses several key aspects of military operations. One way to address this is to map how exercises address operational functions, e.g., C2, manoeuvre, fire support, mobility and sustainability.

Third, another possible refinement of the framework is to more deeply consider the political dimension of military exercises, since the creation and use of military forces result from the political choices of states. Just as the framework to assess military exercises underpinned an assessment of warfighting potential, it is also an embryo for assessing the political implications of exercises and the way they relate to theories about how to

deter, coerce, or compel, adversaries, as well as how they reassure allies. Fourth, another question is to what extent peacetime military exercises presage performance in war. The obvious cases would then be Russia and Ukraine. Finally, the deadlift simile poorly mirrors the interactive aspect of warfighting. Other similes about what the military body trains in, such as martial arts, may be better, but assessing this will be the joy of future researchers of military exercises to elaborate.

The author works at the Swedish Defence Research Agency (FOI) and follows developments in Russia's Armed Forces. He is a Swedish Army reserve officer.

Noter

1. Measurements of national power abound. Höhn outlines some 69 different approaches to measuring national power between 1936 and 2010, with between 2 and 236 variables. See Höhn, Karl Herman: *Geopolitics and the Measurement of National Power*, PhD dissertation, University of Hamburg, 2011, *https://ediss.sub.uni-hamburg.de/handle/ediss/5238*, (2023-02-02).
2. See, for example: Westerlund, Fredrik and Oxenstierna, Susanne (eds.): *Russian Military Capability in a Ten-Year Perspective — 2019*, Swedish Defence Research Agency, Stockholm 2019, *https://www.foi.se/rest-api/report/FOI-R--4758--SE*, (2023-02-02). Another approach is to use the term, "national power," within which military forces play a key role. See, for example, Tellis, Ashley J.; Bially, Janice; Layne, Christopher and McPherson, Melissa: *Measuring National Power in the Postindustrial Age,* RAND, Arlington, 2020, *https://www.rand.org/content/dam/rand/pubs/monograph_reports/2005/MR1110.1.pdf*, (2023-02-02).
3. This approach underpins much of one of the key works used by military analysts, the IISS's annual *Military Balance*.
4. This article does not explore war as such. For more on the ideas and practices of warfare, the practice of organised violence between two groups, and its political and cultural drivers and contexts, see Heuser, Beatrice: *War – A Genealogy of Western Ideas and Practices,* OUP, Oxford 2022, p. 12.
5. Norberg, Johan and Dalsjö, Robert: "Why we got Russia Wrong" in Lundén, Jenny et al. (eds.): *Another Rude Awakening – Making Sense of Russia's War Against Ukraine*, Swedish Defence Research Agency, Stockholm, June 2022, pp. 19-24, p. 21-22, *https://www.foi.se/rest-api/report/FOI-R--5332--SE*, (2023-02-02).
6. For initial assessments of the performance of Russia's Armed Forces in Ukraine, see, for example, Dalsjö, Robert; Johnsson, Michael and Norberg, Johan: "A Brutal examination", *Survival*, vol. 64, No. 3 (June –July 2022), pp. 7-28; and op. cit., Norberg, Johan and Dalsjö, Robert, see note 5.
7. See Aronsson, Albin and Ottosson, Björn: *Västlig militär övningsverksamhet 2014–2019: Anpassning, utveckling och framsteg* [Western military exercises in 2014–2019: adaptation, development and progress], Swedish Defence Research Agency, Stockholm 2020, *https://www.foi.se/rest-api/report/FOI-R--4875--SE*, (2023-02-02); Norberg, Johan: *Training to fight – Russia's Major Military Exercises 2011–2014*, Swedish Defence Research Agency, Stockholm 2015, *https://www.foi.se/rest-api/report/FOI-R--4128--SE*, (2021-04-10) and Norberg, Johan: *Training for War – Russia's Strategic-level Military Exercises 2009–2017*, Swedish Defence Research Agency, Stockholm 2018, *https://www.foi.se/rest-api/report/FOI-R--4627--SE*, (2021-04-11).
8. See, for example, Biddle, Stephen: *Military Power Explaining Victory and Defeat in Modern Battle*, Princeton U.P, Princeton 2004, p. 6 and Cliff, Roger: *China's Military Power: assessing Current and Future Capabilities*, Cambridge U.P., New York 2015, p. 4.
9. Menning, Bruce, W.: "Train Hard, Fight Easy: The Legacy of A. V. Suvorov and His 'Art of

Victory'", *Air University Review,* November-December, 1986, pp. 79-88, *https://apps.dtic.mil/sti/pdfs/ADA216366.pdf*, (2023-02-06).

10. Olsen, Jan M.: "Russia threatens response to huge NATO exercise, says its new weapons will be unrivalled anywhere", *Military Times*, 25 October 2018, *https://www.militarytimes.com/news/your-military/2018/10/25/russia-threatens-response-to-huge-nato-exercise-says-its-new-weapons-will-be-unrivaled-anywhere/*, (2023-02-03).
11. Lee, Rob: *Russia's Coercive Diplomacy: Why Did the Kremlin Mass Its Forces Near Ukraine This Spring?*, Foreign Policy Research Institute, 23 August 2021, *https://www.fpri.org/wp-content/uploads/2021/08/russias-coercive-diplomacy.pdf*, (2023-02-02).
12. The key book dealing exclusively with military exercises notes examples from NATO, Austria, Greece, Russia, Middle East, India and Pakistan, as well as China. See Heuser, Beatrice; Heier, Tormod and Lasconjarias, Guillaume (eds.): *Military Exercises: Political Messaging and Strategic Impact*, NATO Defence College, Rome 2018, p. 1,*http://www.ndc.nato.int/download/downloads.php?icode=546*, (2023-02-02) and Lasconjarias, Guillaume: *The Utility of Military Exercises – From Readiness to enhanced Deterrence?*, Centre for Military Studies, University of Copenhagen, Copenhagen 2020, p. 1,*https://cms.polsci.ku.dk/publikationer/the-utility-of-military-exercises---from-readiness-to-enhanced-deterrence/CMS_Report_2020__4_-_The_Utility_of_Military_Exercises.pdf*, (2023-02-02).
13. Norberg, Johan: "Russian Exercises and Fighting Power 2009–2016" in op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 243-268, p. 268. See also Section 6 below.
14. Yossef, Amr: "Military Exercises in the Middle East: From Cover for War to Alliance Reassurance" in op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 285-308, p. 285.
15. Op. cit., Norberg, Johan: *Training to fight – Russia's Major Military Exercises 2011–2014*, see note 7, pp. 49-50.
16. Schwirtz, Michael; Reinhard, Scott and Holder, Josh: "How Russia Has Increased Its Military Buildup", *New York Times*, 2022-01-27, *https://www.nytimes.com/interactive/2022/01/27/world/europe/russia-forces.html,* (2023-02-02).
17. See *https://www.dictionary.com/browse/power*, *https://www.dictionary.com/browse/capability*, (2023-02-03) and *The Cassell Concise Dictionary*, London, Cassell, London 1997, p. 212 and 1137.
18. Op. cit., Westerlund, Fredrik and Oxenstierna, Susanne (eds.), see note 2, and op. cit., Tellis, Ashely J. et al., see note 2.
19. Norberg, Johan and Goliath, Martin: "The Fighting power of Russia's Armed Forces in 2019" in op. cit., Westerlund, Fredrik and Oxenstierna, Susanne (eds.), see note 2, pp. 59-77.
20. There are further dimensions among the actors (e.g., allies and, for major military powers, regional or combatant commands with joint forces) and in the different levels of war (e.g., grand strategy-military strategy, as well as the intermediate operational-strategic and operational-tactical levels. Similarly, the term *potential* should ideally be warfighting potential, for the strategic and operational levels, and combat potential, for the tactical and combat levels. This article omits these elaborations for simplicity. Figure 1 and ensuing discussions on the concepts of combat potential and combat power build on Vego, Milan: *Joint Operational Warfare*, US Naval War College, Newport 2007, pp. III-33-34, GL-5. The elaboration with "military exercises," between potential and power, is one of this article's new proposals.
21. A wider concept is C4ISR – Command, Control, Communications, Computers (C4), Intelligence, Surveillance and Reconnaissance (ISR). Since the intricacies of commanding forces is not in focus here, the simpler and well-established term, C2, is preferable.
22. "Fighting power" also has a different meaning not used in this article: " ... the sum total of mental qualities that make armies fight", van Creveld, Martin: *Fighting Power – German and US Army performance 1939–1945*, Greenwood Press, Westport 1982, p. 6.
23. Several terms pertain to military exercises. In this article, a major exercise is the biggest exercise a state or an alliance's forces will conduct in a period, say a year. Manoeuvres (plural) are two-sided major exercises, with substantial forces "fighting" each other. In contrast, manoeuvre (singular) is the operational function of taking and holding terrain. Some

call major exercises war games, but here that concept implies cognitively-oriented exercises, table-top exercises, or command post exercises for commanders and staffs, but without commensurate forces in the field, in contrast to major exercises and manoeuvres, which both involve forces in the field.

24. Organisation for Security and Cooperation in Europe.
25. Op. cit., Heuser, Beatrice et al. (eds.), see note 12, p. 1, and op. cit., Lasconjarias, Guillaume, see note 12.
26. Öberg, Dan: "Exercising war: How tactical and operational modelling shape and reify military practice", *Security Dialogue*, vol. 51 (2-3), 2020, pp. 137-154; van Creveld, Martin: *Wargames From Gladiators to Gigabytes*, Cambridge University Press, Cambridge 2013, and Greer, Jim: "Training: The Foundation for Success in Combat" in Wood, Dakota L. (ed.): *2019 index of U.S. Military Strength*, Heritage Foundation, Washington 2019, pp. 37-45, *https://www.heritage.org/sites/default/files/2018-09/2019_IndexOfUSMilitaryStrength_WEB.pdf*, (2023-02-02).
27. Op. cit., Lasconjarias, Guillaume, see note 12, p. 1.
28. Op. cit., Heuser, Beatrice et al. (eds.), see note 12.
29. Heuser, Beatrice and Ruiz Palmer, Diego: "Introduction" in op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 1-8; p. 1.
30. Heuser, Beatrice: "Reflections on the Purposes, Benefits and pitfalls of Military Exercises" in op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 9-25.
31. Heier, Tormod and Lasconjarias, Guillaume: "Conclusions" in op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 353-365; pp. 354-5; 357; 358-9; 360-4.
32. Op. cit., Lasconjarias, Guillaume, see note 12, p. 1; 7-8.
33. Ibid., pp. 26-9.
34. Op. cit., Öberg, Dan, see note 26, pp. 141-2; 143-6; 149.
35. Op. cit., van Creveld, Martin, see note 26, pp. 1-5; 7; 190-191; 308-309 and 314.
36. Ibid.
37. The studies referred to below use the term military capability, not warfighting potential.
38. Op. cit., Aronsson, Albin and Ottosson, Björn, see note 7, pp. 22; 42-55.
39. Op. cit., Norberg, Johan: *Training to fight – Russia's Major Military Exercises 2011–2014*, see note 7, and Norberg, Johan and Simpson, Natalie: *Zapad-2021 and Russia's potential for warfighting*, Foreign Policy Research Institute, Philadelphia 2021, *https://www.fpri.org/wp-content/uploads/2021/09/web-eucom-1-norberg-.pdf*, (2023-02-03).
40. Op. cit., Norberg, Johan*: Training to fight – Russia's Major Military Exercises 2011–2014*, see note 7, p. 5.
41. Op. cit., Norberg, Johan: *Training for War*, see note 7, p. 48-9.
42. Op. cit., Norberg, Johan and Simpson, Natalie, see note 39.
43. Op. cit., Heuser, Beatrice et al. (eds.), see note 12, pp. 9-25.
44. Ångstrom, Jan and Widén, J. J.: *Contemporary Military Theory – The dynamics of war*, Routledge, Abingdon 2015), pp. 4-23 and Vego, Milan: "On military theory," *Joint Forces Quarterly*, vol. 62, no. 3, 2011, pp. 59-67, p. 60, 64, *https://apps.dtic.mil/dtic/tr/fulltext/u2/a546600.pdf*, (2023-02-03).
45. Op. cit., Heuser, Beatrice et al. (eds.), see note 12, p. 1, and op. cit., Lasconjarias, Guillaume, see note 12, p. 1.
46. OOTW may include Strikes and raids, peace enforcement, support to insurgency, antiterrorism, peacekeeping, counterdrug actions, disaster relief, civil support, peacebuilding, and nation assistance. See FM 105-5 OPERATIONS, US Department of the Army, Washington D.C., June 1993, p. 2-1, *https://www.bits.de/NRANEU/others/amd-us-archive/fm100-5%2893%29.pdf*, (2023-03-24).
47. Betts, Richard K.: *Military Readiness – Concepts, Choices, Consequences*, Brookings Institution, Washington D.C. 1995, p. 27.
48. Op. cit., Ångstrom, Jan and Widén, J. J., see note 44, pp. 7-8.
49. Op. cit., Vego, Milan, see note 22, p. XI–7.
50. Schüler, Martin: *Säkerhetsklimat i en militär organisation*, Swedish Defence University, 2022, p. 27. Russia's Ministry of Defence (MoD) notes that exercises enables testing new procedures or organisation structures, combat readiness and display capabilities; Russia's MoD Encyclopaedia (2023): "Uchenie", *https://en-*

cyclopedia.mil.ru/encyclopedia/dictionary/details.htm?id=14075@morfDictionary, (2023-02-03).

51. Possibly with the exception of cyber actions.
52. See also the term *virtuality* used in Section 5 and Footnote 28, above.
53. Interview with Lt. Gen. (ret.) Ben Hodges, 19 September 2022.
54. Ibid.
55. See op. cit., Schüler, Martin, see note 50 and Eriksson, Mats: "Forskaren: Försvaret fokuserar på att vinna övningar – inte strider" [Research: The Armed Forces Focus on Winning in Exercises – not on [learning for] Combat], *Swedish Public Radio article*, 2022-09-21, *https://sverigesradio.se/artikel/kritiken-forsvaret-fokuserar-pa-att-vinna-ovningar-inte-strider*, (2023-02-02).
56. The author thanks Colonel Pär Blid, alumnus of the Russian General Staff Academy, for these comments, e-mail from 21 January 2023.
57. Other aspects of military exercises may range from financial and medical to environmental, but those aspects are not dealt with here.
58. Op. cit., Norberg, Johan: *Training for War – Russia's Strategic-level Military Exercises 2009–2017*, see note 7, pp. 15-17.
59. Von Clausewitz, Carl: *On war*, Penguin, Harmondsworth 1968, p. 101.
60. Main, S. J.: *The "Brain" of the Russian Army – The Centre for Military-Strategic Research, General Staff, 1985–2000*, Directorate General Development and Doctrine, Royal Military Academy Sandhurst, 2000, *https://nuke.fas.org/guide/russia/agency/c101-sjm.htm*, (2023-02-06).
61. Since infrastructure that enables military operations is also to a large extent civilian, this aspect is not dwelled on further here, given the focus on military exercises, i.e., the training of the military body as such, not the locations of the gyms.
62. The breathing simile was proposed by Professor Beatrice Heuser in an e-mail to the author in 2021.
63. See "What's the Difference Between Metaphor, Simile, and Analogy?", *MasterClass*, 2021-08-25, *https://www.masterclass.com/articles/metaphor-similie-and-analogy-differences-and-similarities#whats-the-difference-between-metaphor-simile-and-analogy*.
64. Since exercises pertain to a force's unilateral training before war, the deadlift is a good analogy for warfighting potential. For warfighting power, i.e., outcomes in war, a better analogy is two martial arts athletes facing off, but that is not explored here. See also Collins English Dictionary, *https://www.collinsdictionary.com/dictionary/english/deadlift*, (2023-01-12).
65. C2 complexity arguably increases as the physical size of a force increases. C2 staff and structures must coordinate an increasing number of parts. Furthermore, logistics become more complex.
66. For brevity, the kinds of pieces of equipment come in the broadest possible categories: aircraft (fixed and rotary wing as well as UAVs), ships (all sizes, on and under the surface) as well as ground forces equipment (tanks, artillery pieces, armoured vehicles etc). This does not enable a detailed analysis of a forces ability or specific war games, but gives a rough indication of scale and scope that one can match against the stated level of operation.
67. Op. cit., Norberg, Johan: *Training for War – Russia's Strategic-level Military Exercises 2009–2017*, see note 7, pp. 21-22.