

## ÚČINKY NA OPERAČNÍ ÚROVNI VÁLKY: BOJOVÁ SÍLA A PROBLEMATIKA VOJENSKÉ EFEKTIVNOSTI

### EFFECTS ON THE OPERATIONAL LEVEL OF WAR: FIGHTING POWER AND THE PROBLEM OF MILITARY EFFECTIVENESS

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#### Abstrakt

*Válka jako komplexní adaptivní systém znamená, že účinky mohou mít jak systematické tak náhodné příčiny. Ve válce jsou identifikovatelné vztahy příčiny a následku i jevy, které nemůžeme vysvětlit na základě analytické racionality. Předpoklady týkající se vojenské efektivity jsou hodně permissivní, ale stejně tak deterministické či heuristické. Míra vojenské efektivity tak často odráží součet jednotlivých celků, nikoli kolektivní parametry. Bez ohledu na konceptualizaci je schopnost učit se a přizpůsobovat (vyjádřena jako bojová účinnost) důležitým atributem a odkazuje na určitou mezeru v operačních schopnostech v průběhu času. V tomto článku autor navrhuje přezkoumání dané problematiky na operační úrovni, kdy lze vojenskou (bojovou) efektivity vyjádřit konceptem bojové síly, protože ve většině případů přicházejí vítězné války jako výsledek vítězných bitev.*

#### Abstract

*War as a complex adaptive system indicates that effects can have both systematic and accidental causes. In war there are identifiable cause-and-effect relationships, and phenomena we cannot explain based on analytical rationality. Assumptions regarding military effectiveness are as much permissive as they are deterministic/heuristic. Thus, measures of military effectiveness often reflect the sum of individual aggregates rather than collective characteristics. Whatever the conceptualisation, the ability to learn and adapt expressed as military effectiveness appears an important attribute and refers to a certain gap in operational capabilities over time. In this article the author suggests to examine it on the operational level where military effectiveness can be expressed by the concept of fighting power, as in most cases winning wars comes as a result of winning battles.*

#### Klíčová slova

Účinky, komplexní adaptivní systém, efektivity, bojová síla, technologie.

#### Keywords

Effects, complex adaptive system, effectiveness, fighting power, technology.

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### INTRODUCTION - ASSUMPTIONS ON MEASURING MILITARY EFFECTIVENESS

At the heart of this article is the assumption that addressing *military effectiveness* can be a meaningful undertaking as no one would doubt that victory or defeat in war come from the ability to achieve various sorts of effects on the enemy. There is also a general consensus that effects achieved on the strategic, operational and tactical level vary in importance and significance. In general, we can state that the more we approach the strategic level, the less it becomes possible to discern effects as this level mostly refers to the psychological aspects of war. Tactical level effects,

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though easier to discern as they mostly refer to physical destruction, show an abundance of possibilities and are considered as having far less value. The operational level of war, which is in-between, appears to be best suited to successfully address military effectiveness for which the concept of *fighting power* is introduced. Fighting power as a concept, however, is used in the article not as an approach to quantify, but to develop a better understanding for the many aspects that make up military effectiveness in war. For this reason, the concept of fighting power is merely used as a vehicle to explore military effectiveness from a multitude of angles including social, cultural, educational, and other factors. In order to put the topic into a recent and relevant framework, war is seen as a *complex adaptive system* that constantly evolves due to the interaction of the belligerents.

### **WAR AS A COMPLEX ADAPTIVE SYSTEM**

The recent fashion to conceptualise war as a complex adaptive system has serious consequences in the way military effectiveness can be approached. Complex adaptive systems in general stand for dynamically evolving phenomena rather than single instantaneous events. War seen as such stands for a series of dynamic interactions in which the belligerents attempt to gain advantage over time that might either accumulate or reverse into balance again. War happens in the form of interactions of various sizes until one belligerent is defeated or decides to surrender. In this process it is the product rather than the sum of interactions that decides on the outcome: wars can last until the bitter end or stop before total destruction.<sup>1</sup>

Whatever the conceptualisation, the ability to learn and adapt expressed as military effectiveness appears an important attribute and refers to a certain gap in operational capabilities over time. Military effectiveness is a crucial factor in war; therefore it deserves a close examination. However, attempts to get a grip on military effectiveness suffer from the challenge that we have to deal with a multitude of factors that are very difficult to calculate. Any attempt to describe it means that we limit our attention to certain features and do not focus on the full range of possibilities. Consequently, the results gained reflect as much practical benefits as a certain analytical convenience. Even if the chosen indicators appear to be strongly interrelated, results still might be narrow and highly inconsistent. Attempts to get a grip on military effectiveness further face the problem of no clear causality that can only be lessened, but never eliminated. Even if we can establish a causal link between military effectiveness and its variables, the only possible way to do it is by restricting the dependent variables and more clearly defining what sort of effectiveness we mean.<sup>2</sup>

War as a complex adaptive system stands for events that can have both systematic and accidental causes. It contains phenomena, which stand for identifiable causes and effects, and phenomena humans cannot explain or understand based on causality analysis. The result is that any judgement regarding military effectiveness means that we include certain aspects and exclude others. Assumptions regarding military effectiveness are as much permissive as they are deterministic/heuristic. Measures often reflect the sum of individual aggregates rather than collective characteristics. Similar to any abstract concept military effectiveness is not a concrete thing, but must be inferred from other clues. The more we move towards the intangibles of war the harder it becomes to disentangle indicators and variables from each other. As a result, we have to deal with collective attributes.<sup>3</sup>

### **EFFECTS AND FIGHTING POWER**

All these problems mean that assessing military effectiveness is context-dependent and as such always influenced by cultural and societal attributes. This however, implies that low effectiveness

of some armed forces in the second half of the 20<sup>th</sup> century can mostly be due to societal and cultural determinants. Indicators can include over-control in the form of the rigidly centralised command structure, the officer corps's contempt for ordinary soldiers, and its distrust of a capable NCO corps. Impact of societal and cultural deficiencies is often seen as responsible for the humiliating defeats Arabic forces suffered at the hand of Israel.<sup>4</sup>

It is a commonplace to state that effects in war can be achieved on the strategic, operational and tactical levels. Whereas psychological effects refer mostly to the strategic level, systemic effects address the operational one, and physical effects the tactical level of war. There is also a general consensus that lower-level effects are easier to achieve than higher order follow-on effects. Physical effects, which appear mostly in the form of destruction, are relevant only to the extent they contribute to changes in enemy behaviour; therefore they are mostly of secondary importance. Psychological effects, in contrast, are of first importance, but due to the intricacy of the mechanisms involved very difficult to achieve. Thus, military effectiveness can theoretically be measured on any level of war.

However, we suggest to examine it on the operational level where military effectiveness can be expressed by the concept of fighting power, as in most cases winning wars comes as a result of winning battles. Although such an approach only narrowly grasps the meaning of military effectiveness as it does not address the relationship between political ends and military means, it conveniently provides for the fact that normally battle is the real test of military effectiveness. This limited focus does not exclude that military brilliance often cannot compensate for political incompetence. The biggest benefit of military effectiveness on this level is that we become able to explain the danger that comes from confusing flexibility in war with the illusion of being flexible.<sup>5</sup> This rather narrow approach is also in lieu with the statement earlier that low military effectiveness and disastrous battlefield performance often come as a result of various societal and cultural factors. They often root in the absence of respect, trust and openness, and the lack of an implicit brotherhood among soldiers. Thus, competence on the operational level is an important contributor to victory in which individual soldiering, battlefield behaviour, and organisational efficacy play an important role.<sup>6</sup>

Military effectiveness emphasises first and foremost the human aspect of war, which requires solid and strong bonds in combat units rather than the availability of advanced technology. As one observer remarked the latter “only emerges as a powerful predictor of success when considered in a far more complex and interactive model of training, technology, and terrain.”<sup>7</sup> Fighting power as a concept indicates that favourable technological disparity might erode over time.

### **EXAMPLES OF FIGHTING POWER IN HISTORY**

In his famous book *Anabasis* the Greek general Xenophon reports that on their march back home they kept winning as they consistently outperformed their respective enemies.<sup>8</sup> The Germans in World War II did the same in a similar fashion. During the entire war period soldiers of the *Wehrmacht* always outfought the opposing British and American troops. This was true “when they were attacking and when they were defending, when they had a local numerical superiority and when ... they were outnumbered, when they had air superiority and when they did not, when they won and when they lost.”<sup>9</sup> Explaining such an outstanding performance by single attributes appears to be too narrow and dangerous. Even if we take societal and cultural determinants into account, a German made neither a better soldier than an American, nor is German national character more suitable to wars than the American. The involvement of various difficult-to-conceptualise factors has lead many to state that the issue of military effectiveness is nothing more than an ill-defined concept. War is a complex phenomenon in which the multitude of factors does not make it possible to fully comprehend everything that goes on. Interactions with the enemy directly result in causality brake-down and we face different levels of intensity and a confusing interdependency.

Consequently, the attempt to discuss military effectiveness even in rough terms by using the concept of fighting power requires that we look across horizontal and vertical dimensions of activities.<sup>10</sup>

The simplest way to define fighting power is seeing it as a process in which armed forces put resources into combat. Probably the biggest similarity that connects the ancient Greeks and modern Germans is that they both regarded themselves as members of a highly integrated and well-lead team perceived by and large as just and equitable. This implicit brotherhood meant that the best men fought shoulder-to-shoulder in the front. Military units were designed to produce fighting men of high quality. In both instances fighting power was a product of mutual trust, delegated responsibility and independent decision-making. Both, the Greeks and the Germans did not attempt to prescribe detailed solutions in advance. Much was left to the intuition of commanders and subordinates on the ground. This led to empowerment throughout the ranks, and the emphasis on the means resulted in their unprecedented military effectiveness. They displayed fearsome cold-bloodedness that ranged from utmost stubbornness in close combat, to large-scale butchering of non-combatants. Similar to the ancient Greeks, their modern German equivalents were highly effective both in positive and negative sense. Their battlefield performance during World War II was second to none regardless whether they were in the offensive or the defensive, or committed atrocities.<sup>11</sup>

However, even such a narrow conceptualisation of military effectiveness aimed at the operational level of war demands a warning. As mentioned earlier, fighting power depends largely on the humans involved and reflects the ability to prosecute operations and employ weaponry. Thus, it is a reflection of the quality of an army's personnel and includes aspects that range from battlefield performance to the accomplishment of tasks on various levels and the way those tasks interrelate. Fighting power only expresses how successfully a military force operates on the battlefield once it has engaged with the enemy. Numerous examples in history have shown that outstanding effectiveness in battle can often be irrelevant for the outcome of war with the opposite being equally true.<sup>12</sup>

## **HUMANS AND THE HARDWARE OF WAR**

Fighting power is the expression of superior human qualities rather than outstanding military technology. A good historical example for disappearing technological superiority, both in terms of quantity and quality, can be found in the first phase of British imperialism. Around the end of the 18<sup>th</sup> century some thousand British soldiers were able to defeat much larger Indian armies, despite the fact that in war-relevant technologies India was superior to Europe. Indian steel was not only better than British, but the steel making techniques in India were far more advanced. Indian forces also had better artillery and musket barrels on their side. However, technological inferiority did not hinder the British to expand their empire and extend their influence.<sup>13</sup>

Advanced technology makes it possible to destroy virtually any target. However, the combined effects of stealth technology and precision weaponry appear to be less convincing in re-establishing security or winning hearts and minds. Despite their superiority according to traditional measures, the ability to end wars does not come as a result of technological solutions. There is an emerging gap between advanced military technology and the gains we can expect from its application in terms of influencing behaviour and achieving effects that count. It appears that asymmetric wars of the last two decades require forces committed for the long term on the ground, which are as much capable in searching and destroying insurgents, as winning hearts and minds of the local population. Enhanced destructive capabilities can improve fighting power, but have clear limitations in terms of stability, order and security. War as a complex adaptive system is composed of situations that can quickly switch from destruction to influence and vice versa. War is composed

of many unforeseeable effects, which make the outcome especially in terms of perception and behaviour unpredictable.<sup>14</sup>

### **LINEARITY AND EFFICIENCY IN OUR THINKING**

In simple English measuring indicates a process that points towards a comparison in which we ascertain a certain quantity in terms of a given standard. The evaluation of the effectiveness of military operations found that damages claimed always reflect a combination of a thorough assessment and empty propaganda. Assessing military effectiveness in a way that addresses the psychological domain requires that we focus on perception and influence, rather than on military exchange rates based on technological prowess. Any approach to assessing military effectiveness will always be full of controversies. War as a complex adaptive system stands for the existence of so many contextual factors that the relationship between the action taken, the object selected, and the consequence in the form of effects achieved will always be hidden to a certain degree.<sup>15</sup>

Military effectiveness is also a reminder of the fact that Western thinking is inherently linear and efficiency obsessed. This is manifest in its general preoccupation with numbers, which are often regarded as the only reality instead as means to look at reality. This preference is not surprising since numbers allow for management, something that is seen in Western culture as very important: control. Numbers and metrics are regarded as hard facts and number crunching as the primary means of control. Unfortunately, controlling a complex adaptive system such as war is very difficult if not impossible. Fighting power and most of its attributes depend on humans and express performance capabilities, which can never be reproduced by simple measurement. Military effectiveness emerges as a result of qualities and behaviours that are choices made by people on all levels. War as a complex adaptive system indicates that military effectiveness is as much the product of satisfying the superiors' needs as that of local knowledge and expertise.<sup>16</sup>

A complex adaptive system lives on feedback. Probably the biggest difference between feedback and measurement is that the former is self-generated and depends on context. Feedback in war changes constantly over time and indicates that instead of letting measures define what is meaningful, the emerging meaning of our actions should define the measures.<sup>17</sup> In the case of war feedback is present in the interaction of the belligerents. It highlights the fact that military effectiveness demands a conceptualisation in which the means applied are as much important as the ends sought. Thus we can never fully control events. According to Clausewitz war is never "the action of a living force upon a lifeless mass. ... Thus [we are] not in control: [the enemy] dictates [us] as much as [we] dictate to him."<sup>18</sup>

### **THE PROBLEM OF QUANTIFYING MILITARY EFFECTIVENESS**

Military effectiveness grasped on the operational level as fighting power is not only manifest in combat, but also determines its outcome. Thus, the question of whether it is possible to quantify it in order to make military effectiveness measurable naturally arises. In his attempt to identify a useful theory of combat, Dupuy referred to Clausewitz and claimed that he had an analytical approach to war and thought of combat in mathematical and quantitative terms.<sup>19</sup> Certainly, it is true that Clausewitz used a vocabulary, which was interwoven with terms and expressions borrowed from various natural scientific disciplines. It is equally true that Clausewitz referred to various measures throughout his work such as scale, degree or quantity to which, according to Dupuy, at least tentative values can be given and expressed as the *Law of Numbers*. This law makes it possible for him to determine the outcome of battles, hence to quantify fighting power and measure military effectiveness. Without going too much into detail, for Dupuy fighting power (P) was the product of the number of troops (N), variable circumstances that affect a force in battle

(V), and the quality of the force involved in battle (Q). Consequently, he claimed that fighting power can be seen as a result of the following equation:

$$P = N * V * Q$$

The equation also makes it possible to express relative military effectiveness in the case of two belligerents. It can be expressed as a difference in the belligerents' respective military effectiveness where (r) identifies the red force and (b) the blue force:

$$P = \frac{N_r * V_r * Q_r}{N_b * V_b * Q_b}$$

His approach is especially interesting from a complex adaptive system point of view, as Dupuy explicitly emphasised the importance of a bottom-up, inductive process in approaching military effectiveness. He assumed that this way it becomes possible to provide insights into the various interactions of the variables and get to a reasonable quantification. However, even he eventually had to admit that this quantification does not allow predicting the future with any accuracy. The best the equation can provide for is the avoidance of dangerous assumptions and false conclusions. Thus, Dupuy could not address the multitude of factors such as leadership, morale, cohesion, motivation, initiative, and trust, which are easily identifiable, but also frustratingly intangible. In order to get a grip on various effects, the best he did was to suggest that the effects of intangibles as named should be determined by historical analysis.<sup>20</sup> The attempt to measure military effectiveness in the internal and rather limited context of combat, suffers from inaccessibility of reliable data. Assessing military effectiveness in a much broader context with its wider perspective pointing towards the political interest of the belligerents is even less reliable and has, at best, a transitory value. Consequently, it should not come as a surprise that measures of military effectiveness, such as Battle Damage Assessment, are normally related to physical activities, since behavioural characteristics indicating higher order follow-on effects are the most difficult to measure.<sup>21</sup>

## WAR DISPLAYING WICKED PROBLEMS

War as a complex adaptive system means that we always have to expect waves of repercussion since influencing any given node can induce severe and unexpected effects elsewhere. It appears that the issue of military effectiveness reflects nothing more than our arrogant confidence in detecting root causes.<sup>22</sup>

The problem of grasping military effectiveness even in a rather limited context on the operational level expressed as fighting power can be explained by the fact that war is full of ill-defined and inseparable problems often labelled as *wicked*. The lack of clarifying traits in such problems allows for resolution rather than solution – over and over again. Wicked problems cannot be formulated definitively and exhaustively since formulating a wicked problem is a problem in itself. Setting up and constraining the solution space, constructing meaningful measures of performance are at the heart of the problem's wickedness. Wicked problems are infinite. There are no criteria that tell when solutions are found. Terminating works are rather due to external reasons such as running out of resources rather than to internal reasons coming from the logic of the problem. Wicked problems do not allow for objectively decisive criteria to define the correctness or falseness of solutions. Thus, solutions can never be true or false, only bad or good, as they are influenced by the interplay of various cultural, social and political factors. Wicked problems have no solutions that can be tested immediately or ultimately. Whatever the solution to a problem, we can be sure that it always generates unintended and undesired consequences, which often outperform the desired effects we want to achieve.<sup>23</sup>

Wicked problems mean that history matters. Every solution implemented has a consequence that leaves traces we cannot reverse. Attempts to undo or reset past actions poses a significant challenge as they also represent further sets of wicked problems. Wicked problems do not have an enumerable set of potential solutions. Sometimes, no solution can be found, or the selected solution is just as good as any other potential solution. What should be pursued, implemented and enlarged is a matter of subjective judgement. Wicked problems are essentially unique. They always yield a distinguishing property of importance since there are no classes that allow for principles of solutions fitting to all members of a class. Despite obvious similarities, there is no certainty about the particulars of any given problem.<sup>24</sup>

Wicked problems are always a symptom of other problems. Addressing the problem at any given level can never be decided logically, since there is no natural level of wicked problems. Even systemic approaches and incrementalism can make things worse, rather than better. Wicked problems can be explained in numerous ways, since there is no rule that determines which explanation is correct. Thus, the choice of explanation is arbitrary and guided by attitudinal criteria, since people generally choose those explanations that are most plausible to them. Wicked problems stand for ambiguity of causal webs, in which solutions always point towards further sets of dilemmas. Actions always generate consequences and the effects regardless whether desired, undesired, intended, unintended, good or bad, matter a great deal to those who are affected.<sup>25</sup>

## CONCLUSION

The 20<sup>th</sup> century was full of examples that as soon as a war started it tended to generate its own policy based on its own momentum. This attribute both, rendered the original political purposes obsolete and erected new political imperatives. War conceptualised as a complex adaptive system displaying interactive processes means that it must be defined as much by political goals pursued by the military, as by acknowledging the limitations of militarily realisable political goals. An organic conceptualisation takes into account that focusing ends at the expense of the means can easily jeopardise success. Rigidity and blind adherence to predefined goals can result in mounting costs of money and men. An exclusive focus narrows exploitable options on the operational level with the consequence that we become imprisoned in false hopes chasing desired effects. Even fighting power as a concept to get a grip on military effectiveness on the operational level of war is scarcely more than an attempt to grasp a continual and kaleidoscopically shifting process.

War conceptualised as complex adaptive system indicates that much of Western political-military thinking is based on dangerous assumptions. Due to its inherent bias towards the instrumental dimension of war it cannot see and address international security problems other than in quantitative and technological terms. Traditional attributes of war, such as uncertainty, risk and ambiguity, increasingly disappear from the vocabulary or are often buried under empty concepts. This ignorance and the resulting mechanistic approach to war explains why a force employment concept such as effects-based operations offering “quantitatively guaranteed predictive capabilities with respect to human affairs“ could become an all encompassing credo.<sup>26</sup> It displays a dangerous simplification of war and the only logical outcome of it can be nothing else than panaceas that promise quick, easy and cheap victories. Complex adaptive system indicates war to be an open-ended dynamic process in which the best we can do is to act on local information, learn from mistakes and hope that a better mix of training, leadership, equipment and weaponry can result in victory. With the concept of fighting power we assume that better military discipline contributes to better performance in battles, better command and control practices, and eventually to higher military effectiveness.

The biggest benefit of seeing war as a complex adaptive system might be that we are forced to acknowledge the necessity to harmonise effectiveness with efficiency. Although even the combination of both does not allow for perfect solutions, it can guarantee that we do not fall out of

alignment in terms of external demand and internal variation. Being effective and efficient means doing the right things right and successfully combining the science and the art of war. The West regards important aspects of war, such as strategy development, command and control, and military effectiveness, as part of an asymmetric engagement. Since 1990, asymmetric and low-tech enemies have shown that will, tenacity, skill and endurance can successfully oppose superior Western firepower. It is not destruction in traditional terms, but time and commitment that have become important factors in war. War is a prolonged stalemate, which drags on with the purpose to erode political support in the West that can eventually turn technological weakness into an exploitable advantage.<sup>27</sup> Complex adaptive system indicates a continuous interaction of the belligerents, in which both sides are simultaneously attacking and defending. Their efforts are continuous and disturbed only by few interruptions.

The aim is not so much to seek a direct head-on annihilation of the enemy, but to confuse him through constant learning and adaptation manifest in quick and fluid movements rather than precise measurements. An organic conceptualisation of war means that we put emphasis on improvisation based on bottom-up local knowledge and working without any direct assistance from the top. Planning is seen as important, but not too important, since success comes mostly as a result of loosely organised, fairly autonomous and dispersed units that carry out individual actions. War as a complex adaptive system offers an enhanced conceptualisation. However, if we want to see war as an interactive process that requires continual effort and commitment over a long period of time, we have to rethink in terms of strategy development, command and control, and as suggested in this article – in terms of military effectiveness, too.

## NOTES

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<sup>8</sup> XENOPHON: *Anabasis*.

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