

The Underdog's Model

A Theory of Asymmetric Airpower

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The airpower assets of nations vary greatly.* The United States operates the world's largest active military aircraft fleet—13,232—followed by Russia with 4,143, whereas the Ivory Coast Air Force only has 5 military aircraft.¹ Despite these vast discrepancies, the influential airpower theories of Giulio Douhet, John Boyd, John Warden, and Robert Pape do not focus on the crucial issue of asymmetry. This gap in the literature is problematic in light of existing realities.

This article proposes a smaller-party-focused asymmetric airpower theory entitled the Underdog's Model (UM). This model aims to explain situations where the abilities of warring parties to project military force applied within or from the air environment differ significantly. The theory is formulated based on empirical data from the air forces of Sweden, Finland, and Israel, and on specific asymmetric wars including the Russo-Finnish War, also known as the Winter War (1939–40), the US intervention in the Vietnam War (1965–73), and the Yom Kippur War (1973).²

Some of these cases have been studied extensively.³ But the literature concerned with asymmetric airpower as such is limited and at times focused on the preponderant power.⁴ The body of work predominantly preoccupied with the smaller

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party is therefore rare but does exist. For instance, Bernard Cai Hanjie argues airpower is strategically beneficial for small states in war and peace due to its speed, reach, flexibility, and elevation—imperative to ensure the continued existence of his native Singapore as it lacks natural strategic depth.⁵

Likewise, Philip Sabin considers the various measures underdogs have taken from the 1940s to the 1990s to counter the airpower of superior foes and concludes they rarely win. They may nevertheless cause serious problems, and Sabin advises Western powers to gain an understanding of the political and cultural nature of their adversaries to avoid such outcomes.⁶

To date, the former wing commander of the Royal New Zealand Air Force, Shaun Clarke, has engaged most extensively with the issue of asymmetric airpower. His strategic persuasion-oriented targeting (SPOT) paradigm suggests small powers should launch high-impact operations aimed at changing the political calculations of their opponent through operational and strategic surprise. These operations should be conducted through military and civilian efforts and take the international law of armed conflict into consideration.

Specifically, Clarke contends small nations should not seek to annihilate the enemy as it is beyond their means. They should rather persuade its leadership to make concessions by launching strategic air strikes against them. These operations should be conducted jointly and in combination with diplomatic measures to pressure the supreme decision-making body of the adversary to alter its policies. The success of these efforts depends on adequate capability, intelligence, and strategic acumen.⁷

Although overlaps with the writings of Clarke exist in terms of the factors considered, this article is not restricted to the issue of strategic bombing that preoccupies Clarke's publications. Instead, it considers the principles the underdog should adhere to in order to maximize the likelihood of victory against an overwhelming adversary. Moreover, in contrast to Clarke's investigation, these findings are not restricted to small states but apply to relatively disadvantaged states of all types, including middle and great powers. It is these existing gaps in the literature that this inquiry seeks to address.

The specific research question this article considers is: how can states enhance their odds of succeeding against an opponent with quantitatively and occasionally also qualitatively superior airpower assets? The theory devised to answer this question, the "Underdog's Model," posits six factors are essential if David is to succeed against Goliath: (1) creativity, (2) self-sufficiency and external support, (3) commitment, (4) intelligence, (5) dispersion and concentration, and (6) the engagement of vulnerable military targets. The likelihood of David prevailing increases the better it performs in these areas compared to Goliath.

The Underdog's Model

In the Underdog's Model (fig. 1), three interrelated issues determine the success of the disadvantaged state: (1) the extent to which it manages to attain its own objectives, (2) the extent to which it manages to prevent the opponent from achieving their objectives, and (3) the costs it pays for accomplishing these two objectives. Simply put, the lower the price the underdog pays for fulfilling its goals and denying those of its adversary, the more successful it is and vice versa. As noted, the UM posits the better an underdog fares in comparison to its more plentifully equipped nemesis across the previously listed six factors, the greater the likelihood of its success in that armed conflict.

In other words, the Underdog's Model is probabilistic rather than deterministic. Due to the inherent limitations of social science, definitive predictions cannot be made. Consequently, the UM is more cautious. It suggests the greater advantage David enjoys against Goliath across the identified factors, the more likely David will succeed. But the theory does not deterministically assure such outcomes. As mentioned, the factors included in the UM were identified and developed by examining the cases of asymmetric airpower referred to above. In the process, factors such as the geography of the country, although important, were discarded in favor of more malleable generic key factors to enhance the applicability of the model across time and space.

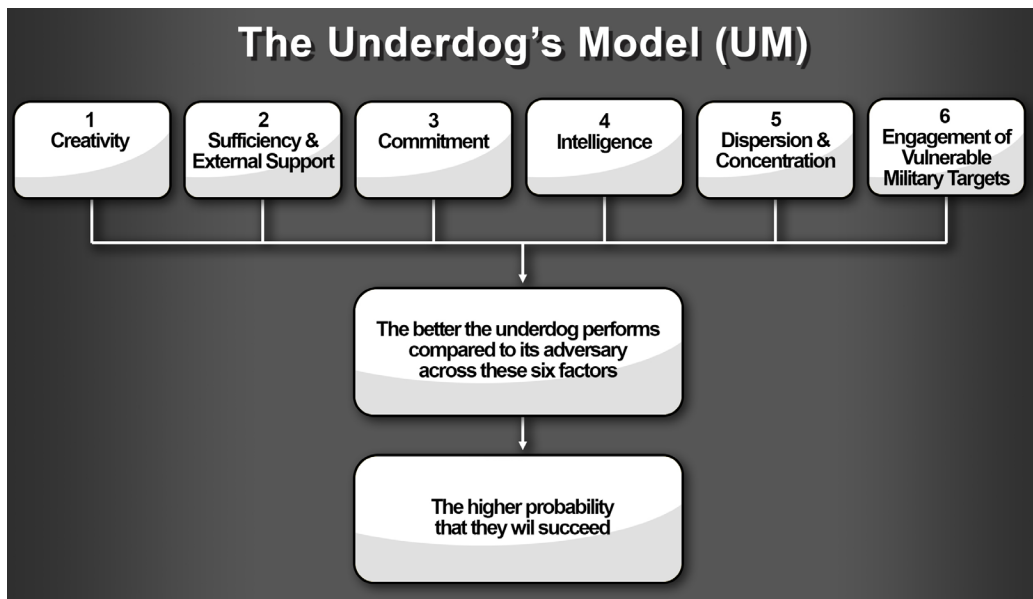


Figure 1. The Underdog's Model

If the underdog outperforms its rival across these six factors and triumphs as a result, the findings are consistent with the model's predictions. Conversely, if the underdog does better than its opponent across the board but still suffers defeat in the air campaign, the case constitutes an anomaly for the UM. Cases where states fail to follow UM prescriptions are not anomalies since it is mainly a prescriptive rather than descriptive theory. It does not seek to explain how states *do* behave in asymmetric settings but rather how they *ought* to act in such situations.

As with all theoretical frameworks, the Underdog's Model will encounter anomalies since it simplifies reality by emphasizing six factors at the cost of others. Yet these simplifications are needed to make sense of a complex reality without getting lost in a myriad of information. In the end, the merits of the UM are determined based on how well and parsimoniously the six factors account for the past, present, and future of asymmetric airpower. The next section examines the first factor it employs for this purpose.

Creativity

Creativity has played a prominent role in Western military thought. Carl von Clausewitz considered the creative genius of a commander essential to manage the frictions of war. That idea has reportedly pervaded Western military organizations ever since.⁸ Instead of focusing on the creative genius of a commander, creativity in the Underdog's Model refers to the production of valuable unconventional ideas and/or material assets at the tactical, operational, and/or strategic levels.

In general, the creative process may come about when solutions are sought to problems that arise. As a result, a hypothesis might be formulated and tested that may require further modification and retesting before a viable creative solution is found.⁹ In asymmetric airpower, the central conundrum that haunts an underdog is how to make the best use of its relatively limited capabilities. A creative solution to this predicament may considerably improve the prospects of success.

According to existing research, the probability of achieving success is enhanced if intelligent, open-minded, intrinsically motivated, self-confident, hard-working, and impulsive individuals are given this task, since these traits are correlated with creativity. These individuals should be provided with supportive and skilled mentors in their field who can steer their creativity in the right direction. These creative individuals should also be placed in diverse teams where backgrounds and knowledge differ to broaden the information and the number of perspectives available to the group. Respecting and learning from others and building on each other's ideas should be the guiding principles in these forums. Risk taking should be encouraged while hierarchies should be downplayed to foster creativity.¹⁰

Finland displayed creativity in practice during the 1930s as it sought to remedy its quantitative and qualitative inferiority vis-à-vis the Soviet Union. Specifically, the Finns developed the four-finger formation for this purpose (fig. 2).¹¹ In this formation, four aircraft make up two pairs, referred to as the “lead element” and the “second element” respectively. The flight leader is up front and has a wingman to his rear left (lead element). The element leader is to the rear right of the flight leader and the element wingman rear right of the element leader (second element). In this formation, the flight leader and element leader have offensive roles and attack enemy aircraft whereas the wingmen are supposed to act defensively and cover their rears.¹²

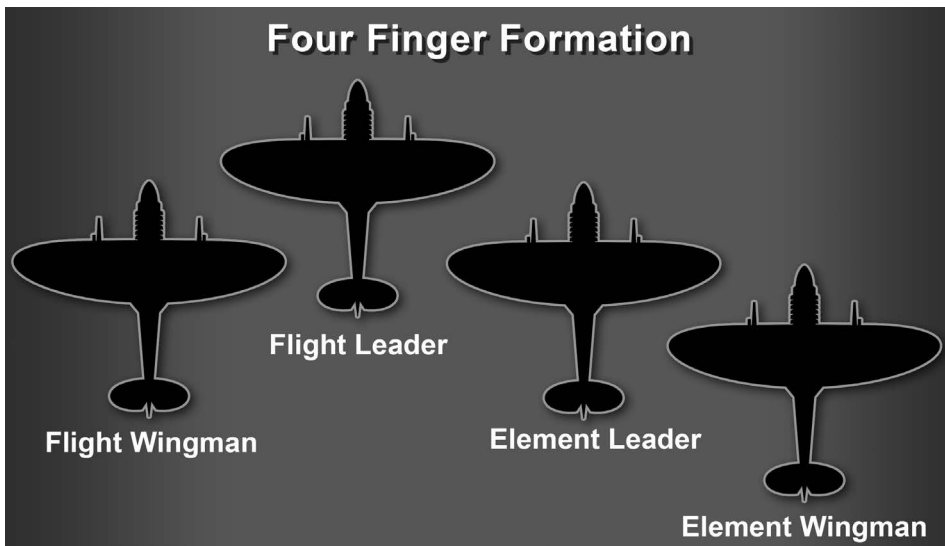


Figure 2. Four-finger formation

The four-finger formation enhanced the vertical and horizontal separation of the Finnish aircraft, improved their situational awareness, and made them more difficult to detect. The flexibility of this formation also enabled their aircraft to split and attack in pairs. In 1939 when the Winter War broke out, the Finnish Air Force tested this creative tactical innovation. They did so against their Soviet opponents that adopted the conventional Vic formation with three aircraft, one up front and the other two in rear right and left positions. Despite the fact the Finns were outnumbered, with inferior aircraft, they reportedly attained a 16:1 kill ratio against the Soviet Air Forces.¹³ The literature partly contributes this success to their adoption of the four-finger formation.¹⁴ This demonstrates the importance of creativity in confrontations with a preponderant enemy.

Self-Sufficiency and External Support

The literature on self-sufficiency is far less developed than that on external support. The issue of external support has proven controversial in asymmetric conflict literature. Whereas some scholars regard it largely inconsequential or even counterproductive, others consider external support essential for success.¹⁵ The present investigation concurs with the latter while also emphasizing the significance of self-sufficiency.

Indeed, the Underdog's Model contends the underdog should strive for maximum self-sufficiency and external support in all relevant areas, including politics, logistics, finances, arms, and personnel. The pursuit of self-sufficiency and external support might appear contradictory, but it is not. As will be demonstrated, both elements are imperative for the success of the underdog. Self-sufficiency safeguards against overreliance and dependence on external actors who may decide to withdraw their support at any moment and force the underdog to rely on its capabilities to fend for itself.

As such, the underdog must be able to uphold, sustain, and project airpower on its own to the maximum extent possible. To accomplish these tasks, the air force in question must obtain sufficient military training, experience, and expertise. It must also show commitment to these endeavors and collaborate efficiently with the rest of the armed forces and with the nation as a whole.

Yet it is extremely unlikely the underdog will manage on its own for any length of time, especially in a protracted conflict with a more powerful opponent. Under some conditions, David may not survive very long without a consistent external supply of critical goods. While the underdog should be as self-sufficient as possible, it must also seek maximum external support.

External support refers to assistance derived from outside sources—the aid of foreign actors. Assistance can come in many forms including political, intelligence, training, provision of logistics, arms, money, personnel, and territorial sanctuaries. To be sure, the preponderant power may attempt to stop these efforts by pressuring the external sponsors to terminate their support or physically inhibit their aid through blockades and aerial interdiction. The underdog should use the diplomatic and military instruments at its disposal to prevent the adversary from succeeding in these endeavors.

The importance of self-sufficiency became abundantly clear for Sweden during the World Wars. When World War I broke out, the country only had 8 military aircraft at its disposal, whereas Germany had 232, France had 138, Great Britain had 113, and Italy had 150.¹⁶ The situation was aggravated by the fact Sweden

could not purchase state-of-the-art aircraft on the international market as a neutral and alliance-free nation.

At the dawn of World War II, Sweden found itself with insufficient numbers of military aircraft once again. It sought to address this deficiency by acquiring planes from other nations. Although Sweden had already paid for some of these aircraft, they were not delivered. For example, Sweden did not receive 300 aircraft from the United States, and France kept for itself the Breguet 694 airplanes that Sweden had ordered.¹⁷

These examples demonstrate the importance of self-sufficiency. Others cannot be counted upon to deliver desperately needed airpower assets in times of crisis. Having learned these lessons, in 1936 the Swedish government decided the Swedish Air Force should have a reliable aviation industry of its own. Consequently, Saab was founded the following year and eventually established itself as the nation's most important aerospace company.

Through these efforts, Sweden would eventually equip its airplanes with modern jet power, significantly increase the number of jet fighters at its disposal, and build its own Saab 32 Lansen aircraft. These developments contributed to the creation of the formidable Swedish Air Force of the 1950s, consisting of domestically built aircraft and ranked as the fourth largest air force in the world.¹⁸

Similarly, Israel underwent a revolution in the development of domestically produced military technology. It began manufacturing electronic countermeasures; decoys; combat aircraft; unmanned aerial vehicles; command, control, and communications; computers; intelligence systems; and standoff air-to-ground precision-guided munitions designed for the Israeli Air Force.¹⁹ Such self-produced equipment greatly aided Israel in its struggles with preponderant adversaries during the Six Day War and the Yom Kippur War.

Yet it is unimaginable that the Israelis would have prevailed without the political, economic, and military support of the United States. Indeed, the United States provided Israel with aircraft, helicopters, munitions, radars, technical advisers, and sophisticated electronic systems when it suffered from critical shortages and outdated systems.

Furthermore, the addition of US fighter aircraft, such as F-15s and F-16s with look-down, shoot-down radars and new air-to-air missiles, turned the qualitative advantage in favor of the Israelis against the Arabs.²⁰ In summary, the Israeli case illustrates the significance of adequate self-sufficiency and external support for success as indicated by the Underdog's Model. Despite their importance, however, these factors are by themselves insufficient; the underdog also needs the commitment to prevail.

Commitment

Thomas Schelling, the 2005 Nobel Laureate in Economics, has written extensively on the art of commitment. He considers it essential to deterring an adversary and an obligation to one's future behavior with the purpose of influencing the choice of others.²¹ Yet that is not how the concept is understood and adopted in the UM. In this framework, commitment refers to the level of devotion the belligerents demonstrate.

Indicators of commitment are (1) the public and soldiers' morale, (2) the proportion of total economic and military resources committed to the conflict, and (3) the number of military casualties a belligerent is willing to tolerate in relation to its population size. By outperforming its opponent in these areas, the underdog can compensate for some of its shortcomings.

North Vietnam and the Vietcong (NV/VC) managed to demonstrate this commitment in the armed struggle with the United States during the Vietnam War. For instance, studies suggest the US aerial bombing campaigns did not break the public or the NV/VC soldiers' morale as they continued to resist the foreign invader.²² In 1966, then-US Secretary of Defense Robert S. McNamara stated, "if I had thought they [NV/VC] could take this punishment and fight this well, could enjoy fighting like this, I would have thought differently at the start."²³

In contrast, the morale among the US public and troops was low as demonstrated by antiwar protests, insubordination, historically high levels of desertion rates, racial tension, and widespread drug abuse within the Air Force and the other branches.²⁴ In the midst of the Vietnam war, Colonel Robert D. Heinl Jr. wrote, "the morale, discipline, and battleworthiness of the US Armed Forces are, with a few salient exceptions, lower than at any time in this century and possibly in the history of the United States."²⁵ The NV/VC thus had a clear advantage over the United States in terms of morale.

Regarding resources, the means available to the United States dwarfed that of the NV/VC. Yet the NV/VC was willing to dedicate a much larger portion of its assets to the war effort. Indeed, sources claim the NV/VC drew on almost all its capabilities and made up for what it lacked in advanced weaponry with astonishing commitment.²⁶ Although the United States allegedly spent a whopping \$200 billion on the war in Vietnam, this expenditure only accounted for a small proportion of its gross national product.

Moreover, even though the United States committed about 543,000 troops to the Vietnam War at most, and the USAF had 58,434 military personnel in South Vietnam at the war's peak, less than 25 percent of the US population was actually involved in this armed conflict.²⁷ In the words of former US Secretary of State

Colin Powell, “in Vietnam, we entered a halfhearted war, with much of the nation opposed or indifferent, while a small fraction carried the burden.”²⁸

Not only was the NV/VC willing to commit more of its resources to the war, but it was also more tolerant regarding casualties. Estimates suggest the NV/VC suffered about 1.1 million military casualties. Considering the entire communist population of Vietnam including the South was approximately 20 million during the war, the military losses alone accounted for 5.5 percent of that part of the population.²⁹ During the same period, roughly 58,000 US military members lost their lives, 2,538 of whom belonged to the Air Force.³⁰ These deaths amounted to about 0.03 percent of the total population of the United States at the time but was sufficient enough a statistic to prompt a withdrawal from the war in 1973 (the total population of the United States was about 212 million in 1973).

Hence, whereas a loss of 0.03 percent was enough to impel the United States to withdraw from the war, the NV/VC kept on fighting despite the fact it lost 5.5 percent of the communist population in military casualties alone. The difference in the number of military casualties the belligerents were willing to tolerate in relation to their respective population size was staggering.

On the whole, the evidence suggests the NV/VC’s commitment to the Vietnam War was far greater than that of the United States in all three dimensions considered by the Underdog’s Model. Jeffrey Record’s investigation also suggests the astonishing commitment of the NV/VC was instrumental to its victory over the United States.³¹

Intelligence

Like commitment, intelligence is instrumental if a small force is to defeat a significantly larger force. Intelligence is defined as information of military value and is an activity that has occurred over the millennia in times of peace and war.³² Sun Tzu focuses on intelligence gathering through espionage and establishes that “if you know the enemy and know yourself, you need not fear a hundred battles. . . . If you know neither yourself nor the enemy, you are a fool and will meet defeat in every battle.”³³ Conversely, the Underdog’s Model pays equal attention to intelligence denial and intelligence gathering and emphasizes all available intelligence disciplines including human intelligence, signals intelligence, imagery intelligence, measurement and signature intelligence, and open-source intelligence.

More specifically, the UM posits that the underdog’s objective is to use all available means to acquire as much accurate intelligence as possible regarding the environment and their opponent’s capabilities, objectives, strengths, weaknesses, and whereabouts. Without this vital intelligence, the underdog will be forced to operate blindly—a recipe for disaster. Since air operations are incredibly swift and

rapid changes may occur, the acquired intelligence must be up to date. Acting on obsolete information is futile. Furthermore, this intelligence must be interpreted correctly and acted upon wisely; otherwise, it is of little utility.

The validity of this point was apparent in the lead up to the 1973 Yom Kippur War. Before the Arab assault, Israeli intelligence obtained accurate information regarding vast troop concentrations on the Egyptian and Syrian fronts but wrongfully considered it a training exercise and therefore failed to anticipate the impending attack.³⁴

At the same time, the underdog must limit its adversary's ability to collect intelligence. Hindering collection capabilities will cripple the antagonist's capacity to launch a successful campaign. This form of denial can be accomplished through camouflage, concealment, deception, and other means of footprint reduction. In peacetime, it is typically harder for democracies to effectively practice denial due to the relative transparency of such societies characterized by free media and legal restrictions. These legal impediments are usually relaxed in wartime. In contrast, authoritarian states are generally less inhibited from engaging in these denial operations due to their more secretive *modus operandi*.³⁵

History is replete with examples where the underdog has obtained valuable information regarding their superior adversary. During the Vietnam War, the intelligence North Vietnam obtained regarding US aircraft movement, along with flight data and weather forecasts provided by the Soviet Union and China, allowed it to foresee US air strikes in several instances.³⁶ Likewise, North Vietnam identified and located US aircraft running low on fuel by monitoring the radio calls of US pilots and integrating this intelligence with its radar picture.³⁷ The North Vietnamese subsequently attacked these aircraft with their MiG fighters.³⁸

The underdog can undertake various measures to conceal vital information from a powerful nemesis. Sweden sought to do this against the Soviet Union during the Cold War. Specifically, the Swedish Air Force developed dispersed and secret operating sites for launching air operations, with aircraft and crucial maintenance facilities hidden several miles away.³⁹ Also, the Swedish Air Force set up camouflage screens that were undetectable by existing sensors, and it employed decoys with the same radar readings, heat signatures, and visual identification markers as its jet fighters to delude the adversary regarding Swedish aircraft whereabouts.⁴⁰ Through these efforts, Sweden sought to deny its antagonist important intelligence concerning air operations and airpower assets.

In the case of open hostilities, the Soviet Union planned to circumvent these measures by sending special forces to kill Swedish aircrews before they had the chance to launch operations.⁴¹ Consequently, success against a more powerful adversary requires sufficiently concealing aircraft and bases and protecting the

personnel necessary to operate the airpower assets. Maintaining secrecy in transparent democracies in an interconnected digital world where readily available data regarding the identity and potentially even the whereabouts of these individuals typically abound is easier said than done. Yet it is imperative to do so.

Dispersion and Concentration

The Underdog's Model also contends it is vital to adhere to the principles of dispersion and concentration that have preoccupied the minds of military thinkers such as Sir Basil Henry Liddell Hart. Although he considers concentration the main principle, Liddell Hart identifies dispersion as "an essential condition of survival and success on the guerrilla side, which must never present a target."⁴² In contrast, dispersion is the main *modus operandi* in the UM, even though brief stints of concentration are considered imperative as well.

Due to its disadvantage, the underdog cannot afford major losses, and dispersal over space helps reduce the vulnerability of airpower assets. By spreading its forces, the underdog can deny the enemy the opportunity to neutralize a significant portion of its airpower assets simultaneously, thus avoiding a quick defeat. Simply put, dispersion helps minimize the damage the opponent may inflict. Such measures may also demoralize the foe if it finds it difficult to locate and destroy airpower assets. The level of dispersion that should be adopted depends on the particular campaign, terrain, and adversary the underdog faces.

Although dispersion is the general rule for the underdog, it must at times spatially concentrate its relatively limited airpower assets. Concentration can be utilized to attain favorable air situations or somewhat even the playing field against the mightier nemesis. Alternatively, a smaller concentration can be used to deceive the enemy of an impending attack in one area while the actual operation is launched elsewhere. Either way, the concentration should be brief, swift, and effective to take full advantage of the assembled strength. After the completion of the mission, the airpower assets should disperse again before the antagonist can concentrate its forces in response.

Sweden has long practiced the principle of dispersion. It built air bases in conjunction with existing highways and roads throughout its territory and constructed short-take-off-and-landing aircraft such as Saab 37 Viggen that can operate from these sites and use highways and roads as airstrips. As a result, Swedish airpower assets could be dispersed effectively across the nation. During the Cold War, the Swedish Air Force had reportedly approximately 30 large peacetime bases, as well as wartime bases and auxiliary bases that included a vast number of highways.⁴³

Sweden established mobile logistics teams to travel between the dispersed locations for repair and maintenance work. The Viggen could be refueled and rearmed

in approximately 10 minutes, thus ensuring the productivity of this dispersal system.⁴⁴ Through these procedures, Swedish airpower assets could be scattered rapidly over a vast area, reducing the potential damage an adversary could inflict through area bombing.⁴⁵

The Finnish Air Force employed dispersion and concentration with great effect during the Winter War when it was outnumbered by the Soviets, at times by a ratio of roughly 20 to 1. Despite these grim odds, the Finns managed to inflict major damage upon the Soviet Air Force while minimizing their own losses, partly due to their successful adaptation of dispersal and concentration tactics. Finland dispersed its aircraft to evade substantial losses, but once Soviet bomber formations were detected, the Finnish fighters concentrated and attacked them in large numbers. Finland's objective was to inflict as much damage on the Soviet bombers as possible before dispersing its fighters back to their respective bases.⁴⁶

Engaging Vulnerable Military Targets

Targeting is at the heart of airpower theory. Douhet identifies target selection as “the most delicate operation of aerial warfare.”⁴⁷ Similarly, Warden asserts “the key to air power is targeting.”⁴⁸ The Underdog's Model concurs but distinguishes itself from their propositions concerning target selection.

Airpower assets typically cover a wide range and can strike targets over a vast area. The UM urges the underdog to employ these capabilities to engage vulnerable military targets—the weak spots of the enemy's military forces. These targets are identified and located through intelligence gathering, the fourth factor in the Underdog's Model. The selection of specific targets should be preceded by a cost-benefit analysis. The more critical the target is and the less costly it is to engage it, the more beneficial it is to attack it.

The model's insistence on vulnerable military targets puts it at odds with Clarke's SPOT paradigm that advocates the engagement of civilian targets as well.⁴⁹ Moreover, it is antithetical to Warden's five-ring model where the military forces are the least prioritized target group.⁵⁰ The Underdog's Model reverses this logic for two major reasons.

First, since military targets are considered legitimate in war, the underdog does not risk alienating potential supporters, turning the world opinion against itself, or legitimizing wide-scale counterstrikes by a more powerful adversary. Inversely, hitting illegitimate targets may strengthen the enemy's resolve to fight, impel it to dedicate more resources to the war, and escalate the ongoing struggle. That should be avoided. As such, Douhet's insistence on bombing the population is often a counterproductive strategy for the underdog since civilian targets are considered

illegitimate in contemporary warfare, and their engagement might provoke unwanted reactions.⁵¹

Second, by focusing on vulnerable military targets, the underdog can sustain its limited resources for longer. Attacks directed against the weak spots of the adversary's forces are less risky and decrease the odds of suffering substantial losses compared to assaults aimed at the rival's strengths. Avoiding losses is essential in an extended conflict with a preponderant enemy. Otherwise, the underdog risks a quick defeat.

Furthermore, successful strikes against the enemy's vulnerable military targets will enhance the will and determination of the underdog while raising costs for the rival and undermining its morale. Over time, the accumulated damage inflicted on the antagonist will reduce its strength and increase its war weariness. In general, the underdog wins by avoiding loss, and the longer the war endures, the higher the likelihood that Goliath will deem the cost of defeating David too high and pull out as a result, as evidenced by the United States' withdrawal from Vietnam after years of fighting.

The Winter War also validates these assertions. At the onset, the USSR deployed 2,318 aircraft against Finland's 114 aircraft. On November 30, 1939, the Soviets dropped bombs over Helsinki causing international outrage and sympathy for the Finnish cause. For instance, the Swedish Voluntary Air Force—the Flight Regiment 19 or F-19—joined the ongoing struggle on the Finnish side against their Soviet adversaries.⁵²

The Finns, on their part, avoided civilian targets and focused their efforts on legitimate vulnerable military targets. As such, they assaulted Soviet bombers and only targeted their more resilient fighters when deemed necessary. The strategy proved successful as Finland's Fokker aircraft managed to neutralize 34 Soviet aircraft in January 1940 alone.⁵³ Sources suggest the Finns shot down 240 Soviet planes in air combat, whereas USSR pilots only managed to neutralize 26 Finnish aircraft.⁵⁴

Conclusion

The Underdog's Model, a theory of asymmetric airpower, explains how the underdog may succeed against a quantitatively and sometimes qualitatively superior opponent. According to this explanation, the outcomes of such encounters are predominantly determined by the combination of six factors: (1) creativity, (2) self-sufficiency and external support, (3) commitment, (4) intelligence, (5) dispersion and concentration, and (6) the engagement of vulnerable military targets. The UM maintains the better David performs vis-à-vis Goliath in these areas, the

higher likelihood it has of prevailing. The empirical evidence presented here supports these propositions.

Future studies should evaluate the utility of the Underdog's Model by subjecting it to rigorous testing and assess how well it fares compared to existing airpower theories such as Douhet's strategic bombing theory, Boyd's observe, orient, decide, act loop, Warden's five-ring model, Pape's theory of coercion, and/or Clarke's SPOT paradigm.

If these examinations lend further support for the UM, they will produce stronger incentives for underdogs to adopt the model to succeed in an asymmetric setting. For the UM to work in practice, a collective's individual members must embrace their responsibilities and contribute to accentuate the six overarching factors that the theory emphasizes. Only then can the shared tactical, operational, and strategic objectives of the underdog be attained and those of the adversary denied at the lowest cost possible—the hallmark of success. ★

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Notes

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