

Ron Tira

**The Limitations of
Standoff Firepower-Based Operations:
On Standoff Warfare, Maneuver, and Decision**

Institute for National Strategic Studies

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Memorandum 89

March 2007

Editor: Judith Rosen
Graphic Design: Kedem Ltd.
Printing: Kedem Ltd.
Cover photo: Lushpix / Unlisted Images, Inc.

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March 2007

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ISBN: 965-459-074-3

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Table of Contents

Introduction	9
Chapter 1	
The Revolution in Military Buildup and Force Utilization	11
Chapter 2	
The Operational Meaning of New Technology	17
Chapter 3	
Realizing the Achievement: The Gap between Direct Action and Indirect Leverage	21
Chapter 4	
Forfeiting the Tactical Encounter for Strategic Decision	25
Chapter 5	
The Difficulty of Creating a Cognitive-Strategic Effect	29
Chapter 6	
Managing Effects-Based Operations	33
Chapter 7	
The SFO Ground Force's Modus Operandi and Abilities	37
Chapter 8	
The Experience of Four Wars: Lebanon II, Afghanistan, Iraq, and Kosovo	43
Chapter 9	
The Enemy's Adjustment to the Concept of Standoff Fire	51
Chapter 10	
Insights from the Principles of SFO	57
Conclusion: Choosing the Best of All Worlds	63
Notes	68
Additional Sources	69

Introduction

Recent years have witnessed dramatic changes in the Israel Defense Forces (IDF) and other Western military organizations regarding force structure and force utilization concepts, based on a preference for standoff precision firepower over classic maneuver. However, as long-range fire is unable to achieve directly all types of required military achievements (such as, for example, seizing, combing, and clearing territory), an innovative approach was developed for deciding wars without direct tactical encounters on the battlefield. Instead, the objective is to be attained indirectly, through effects designed to disrupt the enemy's functioning as a system, thereby bringing it to cognitive-strategic collapse.

Despite the declared intention to maintain the capability of maneuver alongside standoff fire capability, at least in the case of the IDF the balance was not sufficiently maintained. When the second Lebanon War broke out it is doubtful whether the IDF had the requisite level of classic warfare skills, and the war was conducted almost entirely based on standoff firepower and the attempt to generate effects on Hizbollah's and Lebanon's systems. The lesson to be learned from the failure of the war is that standoff fire capability and the ability to generate effects and their results are not absolute and are context-dependent. Standoff firepower will not necessarily lead to cognitive-strategic collapse of the enemy, and will not always lead to realization of the required military objective in the war. Moreover, it is very difficult to assess from the outset whether or not standoff firepower will successfully attain the strategic objective.

For example, at the tactical level, if an enemy force is composed primarily of high signature elements, such as vehicles deployed in exposed formations in the open, the chances of standoff fire destroying

a large number of enemy targets are good. However, when the enemy force is not based on vehicles, or is entrenched, or when the arena is urban or incorporates diverse relief or dense vegetation, the chances of achieving success with standoff fire are reduced. As to the most ambitious aspect of the standoff fire operations approach – the desire to bring the enemy to cognitive-strategic collapse through long-range fire, and without having to encounter the enemy on the tactical battlefield first – this is also context-dependent. It is, of course, a tempting and attractive theory, but the question remains whether it is practical and applicable. At least in most of the cases reviewed below, including the second Lebanon War, the firepower alone did not bring the enemy to strategic collapse.

It seems, therefore, that in Israel's security reality there is no alternative to maneuvering and conquering territory in order to win wars. This is reinforced by the assessment that in the next war – including its closing stages – the Israeli home front will be subjected to enemy rocket and missile fire. In such a situation, in which each side uses strategic firepower against its enemy, conquering territory may serve as a clear indicator of victory that successfully exacts the heavy price of war. Moreover, at the tactical level, capturing territory may be the more efficient means of preventing, or at least reducing, rocket launches. And in a war against terror, presence in the field offers intelligence and operational superiority, which cannot be achieved by standoff measures.



The Revolution in Military Buildup and Force Utilization

In recent years the US armed forces, the IDF, and other Western militaries have been undergoing a dramatic revolution. This revolution has numerous components and is referred to with a variety of names. In the United States and the West it is known as the Revolution in Military Affairs (RMA), the New American Way of War, Army After Next (AAN), Force Transformation, Network-Centric Warfare (NCW), Rapid Decisive Operations (RDO), Effects-Based Operations (EBO), and Shock and Awe. Israel has adopted and even enhanced many of these ideas, including “decentralized warfare,” “the dynamic molecule,” “the swarms” and the “flocks,” “the campaign theme,” “maneuvering by fire,” and “fire as reserve.”

While there are different aspects to each of these terms, in general many of these ideas emerged and became technically possible from the development of a new generation of sensors, long-range guided weapons, and data processing systems that integrate in broadband wireless data communications networks. The common thread to these new approaches – when taken together – is the diminishing need for concentrating and maneuvering ground forces for the “linear” destruction of the enemy’s forces. Instead, information is collected and the enemy is analyzed as a system (and even as a system-of-systems) in order to identify vulnerability nodes in the system and to direct simultaneous standoff fire from the air and from decentralized land formations (which are not in danger due to their detachment from the enemy and their low signature) towards those vulnerability nodes. This creates various effects on the enemy system, among them “blindness,”

“isolation,” “paralysis,” “decapitation,” and “a sense of being pursued.” These effects are designed to bring the enemy to a state of cognitive-strategic collapse, thereby pushing it to adopt the expected behavioral change, which will consequently achieve the strategic objective of the war.

It should be noted that “effect” is defined differently in the US and Israel, and it is often used in ways that depart from its official definition. In practice, the definition of effect incorporates any required military achievement – physical, functional (i.e., relating to impairing the enemy’s functioning as a system), or cognitive. However, the term is often understood in non-material contexts, in other words, in terms of achievements relating to the sense of the enemy, its wishes, and intentions. Effect is also defined primarily as an objective at the operational level, although in practice it becomes part of directing action at the strategic level. In this paper, the term “effect” will be used primarily in its cognitive meaning, and less in relation to the functional or physical meaning.

The innovative military concepts mentioned above were not developed as a cohesive whole and can be examined as at least two separate segments: one is techno-tactical and the other is operational. For example, the enemy may be analyzed on the operational level as a system-of-systems; this analysis identifies effects that will lead to suppressing the enemy’s operational effectiveness, but are achieved by means of “classic” warfare tactics. In contrast, it is possible to develop advanced technologically innovative warfare tactics based on network-centric warfare while managing the operational level in a classic fashion. Yet the said techno-tactical and operational concepts emerged at the same time and in the same context (largely as a response of the American defense establishment to the revolution of the civilian information era of the late twentieth century¹) and they or their derivatives frequently appear together in the professional literature.²

Moreover, the fact that standoff fire offers a relatively limited range of capabilities (that cannot directly furnish all types of required military achievements) means that in some instances the desired military objective has to be achieved indirectly through functional or cognitive effects. At the same time, in certain cases the new operational concepts

purport to attack the enemy's strategic level directly, and this is made possible mainly by the use of innovative long-range precision weapons. This generates an almost essential synergy between the techno-tactical development and the innovative campaign concepts.³ Thus, there is a strong link between the techno-tactical concepts and the said operational ones, to an extent that it is difficult to distinguish one from the other. And while the concepts differ from each other (and are often characterized by new, varied, terminology that at times is inaccessible, complicated, and confusing), here the concepts will be considered together under the term "standoff firepower-based operations," or SFO.

Despite its technological origins, the SFO approach is more than simple upgrading of the existing military machine, and leans toward a revolutionary approach on levels that go beyond the techno-tactical field relating to:

- Buildup and organization of the fighting force
- The concept of force utilization
- The fundamental change in the approach toward using military force in war while blurring the lines between the tactical, operative, and strategic levels.

While most of the literature on SFO talks about the need for balancing SFO with the classic use of force and preserving the ability to maneuver deep into enemy territory, launch direct offensives, and maintain close contact, in practice, budgetary constraints, the focus on low-intensity conflicts, the increased aversion to sustaining casualties during ground maneuvers, and an over-enthusiastic adoption of the SFO revolution have led to its implementation at the expense of classic capabilities. Indeed, in the years leading up to the second Lebanon War, the scope of training and the allocation of resources for classic formations were reduced to the extent that at the outbreak of the second Lebanon War, it is doubtful whether the IDF had adequate classic capabilities.

This paper does not aim to question the ability of SFO to make an important contribution in specific circumstances, against the appropriate enemy, in suitable circumstances, and for a relevant objective. In certain cases, SFO can even be the decisive factor – but not always. Rather, the main argument here is that in many cases the SFO concept may not suit the nature of a specific war, as in the second Lebanon War, for example, and therefore:

- The SFO concept must be adopted gradually, as it matures and proves itself in the field.
- True equilibrium between SFO forces and classic forces and classic military capabilities must be maintained, and SFO must be viewed as an additional instrument in the orchestra conducted by the commander, rather than as a solo instrument.
- The line between the technological-tactical revolution underway and the need to continue conducting the war at the operational and strategic level by adhering also to classic principles must be maintained.

In the US, the innovative approaches progressed from the conceptual stage to the exciting implementation stage only after the issues were dissected and deliberated for over a decade, in public and in hundreds of professional books and papers. An in-depth look at the American analyses reveals that considerable aspects of force buildup and the concept of force utilization derive from the United States' unique need to respond within hours to anywhere in the world with long-range fire and sometimes inter-continental fire, or within days with airborne and seaborne expeditionary deployments, while maintaining joint global control of four separate armed services. Such considerations are, of course, irrelevant to Israel. Thus, it is not enough to embrace American concepts without understanding the specific rationale behind each one. It may very well be that in the face of a given threat in a predetermined theater, there might be better solutions for Israel than the American generic global concept.

Indeed, elsewhere, for example in Germany, SFO ideas were received with cool skepticism and were adopted by the German military (Bundeswehr) selectively and in moderation. The position of the German defense establishment is that technology is an aid in conducting wars but is never the main element, which remains leadership and strategy. The Germans contend that the fog of battle is a human phenomenon and no sensor is capable of dispelling it. More important, the concentration of long-range intelligence gathering sensors and long-range firing elements at the operational level (which is typical of SFO, despite the declared intention of achieving decentralizing) and the erosion of the central role of the autonomous tactical formation that maneuvers deep

into enemy territory (*Auftragstaktik*) are not the right directions to take in force buildup and utilization.⁴

However, in Israel, which may be the only country faced with existential military challenges, the public debate on the subject of SFO has been limited,⁵ both in terms of depth and the scope of participants, and the concepts of SFO progressed to the implementation stage almost imperceptibly. However, the theory did not stand the test of reality. Israel was “lucky” and experienced the limitations of SFO on a relatively small scale in the second Lebanon War and not in an all-out war. It is to be hoped that the failure in Lebanon will result in Israel's reassessment of its approach to the SFO revolution.

The Operational Meaning of New Technology

In the early morning hours of December 1, 1917, two regiments of British cavalry stormed towards Bourslon Wood in France. This was one of the last cavalry charges in the history of warfare. Horses and riders attacked a fortified compound that included barbed wire fencing, minefields, trenches, concrete positions, machine guns, and artillery. The result, of course, was disastrous for the cavalymen, and it was not long until such forces exited the military stage. However, the significance of the technological revolution of World War I was interpreted differently by the particular sides: the French were impressed by the efficiency of the fortifications and the firepower and constructed the Maginot Line. The Germans, meanwhile, looked for ways to circumvent the fortifications and the fire and developed fast-moving warfare of deep outflanking (blitzkrieg). The directions taken by the French and the Germans did not just involve adoption of innovative technology, but also led to completely different approaches to building and organizing a military force and, in particular, its utilization.

The end of the cavalry era teaches us three important lessons. First, sometimes technology does indeed change the battlefield. Second, the operational, organizational, and conceptual significance of a new technology is neither absolute nor self-evident: there are alternative paths of development and caution should be exercised when drawing conclusions. Third, the relative importance of the three foundations of battle – maneuver, shielding, and firepower – constantly changes, and new balances are created and subsequently replaced. One should not assume that a trend of increasing weight of one of the three foundations of battle will continue indefinitely while the others decline, or that a new and permanent reality has emerged. Instead, the continuing

evolution of all three foundations should be assumed, as the technology that creates the means also generates the counter-means. As a side note, it should be mentioned that despite the sharp and sustained increase in the lethality of weapons since World War I, the percentage of casualties out of the total number of soldiers taking part in battles has been in constant decline.⁶

Moreover, not every new technology that promises to create a revolution in the approach to force buildup and use actually does so. Thus, for example, in the early fifties the buzzword of the Eisenhower administration was the "New Look" referring to how wars are waged. The US developed a new generation of long-range bombers capable of attacking any point on the globe, and a new generation of very powerful tactical and strategic nuclear weapons. Furthermore, the US, which enjoyed almost total nuclear supremacy, did not yet understand the significance of nuclear arms: it perceived them as "enhanced dynamite" and the main instrument of future warfare (rather than Armageddon weaponry). As such, the approach to force utilization was to avoid investing resources in "outdated" ground operations against conventional threats and to curtail the attrition entailed by these operations. Instead, the idea was to invest billions of dollars in developing only the "Massive Retaliation" concept, which was an immediate nuclear response to all spectra of threats. This was based on the notion that if the United States has only two possible strategic situations – peace or nuclear war – no potential enemy would dare to challenge the US with any kind of threat.

As a result, the US military devised the Pentomic division concept, a rapid light decentralized force that operated in a dispersed manner without concentrating its forces (so as not to constitute a target for the tactical nuclear weapons of the enemy) and was skilled in carrying out missions in the nuclear battlefield. By 1958, with enormous financial investment, all the US military's regular divisions were transformed to the Pentomic structure. However, by the early 1960s these concepts collapsed and the American divisions reverted to their classic formation, due to two main reasons: first, the Soviets achieved nuclear parity with the United States, and this necessitated developing confrontation means on lower levels than nuclear warfare; and second, it became apparent

that binary responses are not practical in the real world and it is not possible, for example, to respond to provocations by North Vietnam with atomic weapons. The Americans learned in a difficult and costly way that a wide range of military capabilities must be maintained to be able to respond appropriately to the situation at hand.

Similarly, when the first air-to-air missiles were developed the Americans thought there would be no more close aerial battles and that aircraft would be shot down from beyond visual range. As such, the first Phantom jets sent to Vietnam were equipped with advanced air-to-air radar systems, four radar-guided air-to-air missiles, and four heat-seeking air-to-air missiles, but they were not fitted with guns for close aerial combat; nor were the pilots trained for this type of warfare. In reality, however, it was difficult to identify friend or foe and thus distinguish between friendly and enemy aircraft if they were beyond visual range. It also became clear that aircraft flying towards each other cover the distance between them so quickly that there is very little opportunity to fire missiles, and the aircraft quickly meet and engage in classical aerial combat. The Americans' error in understanding the operational meaning of the technology resulted in the loss of a large number of aircraft and crew in the first half of the Vietnam War. Thereafter the Americans reinstated aircraft guns and established Top Gun and Red Flag schools for aerial combat.

Understanding the operational meaning of innovative technology just as the technology emerges, if not entirely impossible, is complex and error-prone. It is doubtful whether we have the necessary tools to analyze ahead of time when a technological revolution will also generate a revolution in the concept of the use of force and if so, in what direction. This means that the solution to operational-technological fog cannot derive exclusively from theory but must emanate from the approach, namely, preference for balanced and gradual change; waiting for examination and substantiation of the new ideas in the battlefield; and not placing all one's military operational eggs in the one basket of advanced – and at times experimental – technology.

Not only is it difficult to understand the technological change and its significance; it is also extremely difficult to identify the theater and nature of the next war correctly. For example, those who built up the US

armed forces after the massive armored battles of World War II could not have foreseen the need to chase after Vietcong soldiers through the jungles of Vietnam. Similarly, the American army that fought through the dust and sand of the desert in the 1991 Gulf War was naturally fashioned in the seventies and eighties to combat the Warsaw Pact armies in the rainy forests of Europe.

Realizing the Achievement: The Gap between Direct Action and Indirect Leverage

As with any new technologies, understanding the operational meaning of the SFO revolution has been a difficult process. Moreover, the attempt to fashion war anew at the operational and even strategic level so that it is in line with the new technological capabilities is likewise problematic. The combat element of SFO is the agent of the standoff fire (or “shooter”), and its main capability is destroying targets, particularly targets with a relatively high signature that are exposed and not sufficiently shielded to withstand a direct hit. However, there are some tasks that are difficult for a shooter to execute, such as seizing territory, combing it for low signature targets, clearing it, and occupying it for long periods.

Thus in practice, SFO largely (if not admittedly) foregoes such forms of battle and tries to achieve the required military objective in the campaign by means of what the shooter knows it can do – destroying targets – even if this means not engaging in the most efficient form of battle, or if this is not the most direct method of applying force to achieve the required military objective. SFO tries to bridge the gap between what the shooter knows how to do and the required military objective in an indirect way, by means of the effects. The idea is that the targets are to be destroyed in a manner that will paralyze the enemy’s system and suppress its operational effectiveness (functional effects). This will create a sense of helplessness and distress that unbalances the enemy, lead to its cognitive-strategic collapse, and drive it to want to terminate the war immediately (cognitive effects), while it succumbs to the SFO user’s war objective.

This point is illustrated by comparing the first and second Lebanon Wars. In both wars one of the principal objectives was the removal of the threat of short-range rockets on northern Israel. In the first Lebanon War the IDF aimed to achieve this by seizing the launch areas, combing them, and clearing them of launchers. This is a means of force utilization that has a direct causal connection to the desired objective, and in fact, after 48-72 hours the IDF had achieved the goal. On the other hand, in the second Lebanon War, the initial General Staff operational design was to direct mainly standoff fire against Hizbollah's systems and those of the Lebanese government in order to create effects designed to generate a behavioral change that would ultimately remove the rocket threat. The direct confrontation with the short-range surface-to-surface rockets only became a principal activity as the war progressed, and even then was mainly implemented based on a hunt-like method using standoff fire. At no stage of the war were the ground forces used according to an operational concept of direct and comprehensive handling of the problem of the short-range surface-to-surface rockets (such as total occupation and clearing all the launch areas). The direct causal connection of the first Lebanon War was replaced by a desire to use force in a manner that would set off multi-phased ripples, whereby the causal connection would be complex if not obscure (figure 1). And, in fact, after 33 days of fighting, the IDF was still unable to remove the threat of short-range rockets from the north of Israel.

According to the General Staff orders for the second Lebanon War, the commander had to plan and direct the use of force (principally aerial force) to generate a complex chain of causal connections: destruction of targets that would create functional effects on the enemy's systems that would in turn spark cognitive effects on its leadership, which would then generate the expected behavioral change, namely, to accept Israel's conditions and remove the threat of the surface-to-surface rockets. This is a complicated task, as the desired effect is not a primary derivative of destruction of the target by the shooter, rather a second, third, or even fourth derivative. As such, it is very difficult, if at all possible, to determine the way to use the force that will generate the chain of required causal connections to attain the required military objective. In addition, in such a situation the final outcome about whether or not the

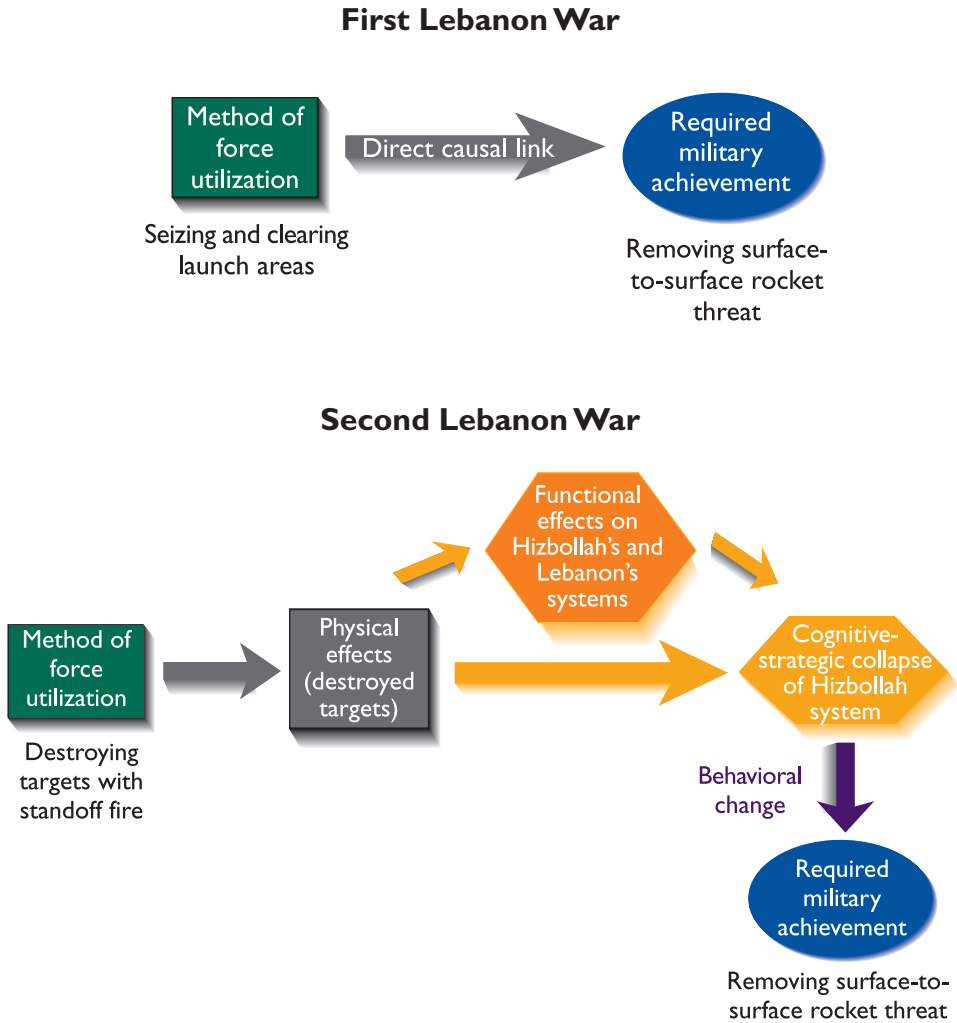


Figure 1. Direct and Indirect Effects of Force Utilization

objectives are achieved is in practice left to the enemy. If the enemy decides to succumb to the effects and if it decides that its cost/benefit calculations do not justify continuing the warfare, the attacker will have achieved the desired military objective. Yet if the enemy elects to remain resolute and defiant, in spite of the destruction of targets and the damages inflicted to its system, then the objective will not be realized.

In this regard SFO differs from classic warfare, at least in the cases designed to change the reality directly.

In the first Lebanon War the threat of surface-to-surface rockets was removed following direct action taken by Israel (seizing and clearing the launch areas), while Israel was not concerned with the psychological or cognitive state of the PLO leadership, its situation assessment, or its cost/benefit calculations. Israel itself changed the reality of the theater, taking unilateral action to which the enemy did not have to “agree.” On the other hand, in the second Lebanon War Israel tried to use effects against Hizbollah’s system, with the (unfulfilled) hope that it would generate a feeling of distress among its leadership and a cost/benefit calculation that would force it to conclude that it itself had to remove the surface-to-surface missile threat on Israel. In other words, Israel hoped to spur the enemy itself to take action that would serve Israel's purposes. Examining the phenomenon from a different angle suggests that in the first Lebanon War Israel chose to act against the enemy’s capabilities, while in the second Lebanon War it opted to tackle the enemy’s desires and intentions. (This, to a great extent, is the mirror image of the intelligence failure of the Yom Kippur War.)

This review indicates that classic military force is a force that imposes, and is capable of directly and unilaterally creating the reality it seeks. In contrast, SFO is a force that exerts pressure and tries to apply leverage on the enemy – to convince the enemy to change its own intentions and to take action that will create the reality that those behind SFO aim to achieve. Destroying enemy targets using high output precision fire may possibly serve a “negative” purpose (such as preventing massive ground-based penetration of heavy enemy forces into one's territory), and it may very well prepare the battlefield for ground maneuvers and facilitate their progress. However, in situations where the war objective is “positive” – in other words, creation of a new reality (e.g., such as driving Hizbollah and surface-to-surface rockets out of Lebanon; opening the Straits of Tiran to shipping; removing the Iraqis from Kuwait; or replacing the regime in Afghanistan) – there seems to be no way of avoiding seizure of enemy territory and unilaterally effecting the change in reality.

Forfeiting the Tactical Encounter for Strategic Decision

Obviously even the classic war does not normally end with the killing of the last enemy soldier and with the seizure of every inch of enemy territory, and at a certain stage, even classic force use reaches a point at which an effect of cognitive-strategic collapse of the enemy is created. However, the difference between a classic war and SFO, particularly the idea of Effects-Based Operations (EBO) of SFO, lies in the attempt by EBO to create a shortcut leading directly to cognitive-strategic collapse of the enemy (or to “leaping” directly to the strategic level). It is important to understand that effects-based operations (at least according to some American theories) are “intended to directly achieve strategic effects . . . [and] are designed to achieve their objectives without first having to necessarily engage the adversary’s fielded military forces in extended operations at the operational and tactical levels of war.”⁷

In other words, in a classic war the military force is activated at the tactical and operational level in order to generate directly a unilateral change in the reality, and it is this change that – at some advanced stage – causes the cognitive collapse of the enemy. However, in the classic war the “leap” between unilaterally changing the reality and cognitive collapse is not great. For example, it was only after the Allies killed five and a half million German soldiers in battle, destroyed a considerable number of German formations, occupied over half of Germany’s territory, and their land forces reached Berlin that the Third Reich experienced a cognitive-strategic collapse. The “leap” required to bridge the gap between reality change and cognitive collapse was sufficiently narrow.

In contrast, the initial ideas of the Israeli General Staff about how to approach the second Lebanon War were mainly to make a direct “leap” to strategy – in other words, to address the collapse of the enemy as a system and principally to achieve its cognitive collapse, while bypassing the need to expend time and resources on a tactical bloody confrontation in southern Lebanon. This was a tempting idea, but the question is whether it was practical and applicable. Certainly in the context of the second Lebanon War the theory did not prove itself. Hizbollah did not experience a strategic-cognitive collapse and Israel did not achieve its war objectives. The attempt to bypass the tactical collision and directly address the strategic effects is more complex, and it is difficult to assess the chances of success or failure ahead of time.

Figure 2 attempts to clarify the issue of the “leap range” between unilaterally changing the reality and the enemy’s cognitive collapse, by comparing the example of the second Lebanon War with the manner in which Israel conducted the Yom Kippur War against Egypt in the southern theater. In the Yom Kippur War, the Egyptians were close to cognitive-military (but not political) collapse and urgently asked for a ceasefire only after the IDF killed thousands of Egyptian soldiers in battle, three IDF divisions crossed to the west side of the Suez Canal, the Egyptian Third Army was cut off, and there was the imminent possibility of the Egyptian Second Army also being surrounded. IDF forces were just 70 kilometers from Cairo and there was no significant Egyptian force between the IDF and the Egyptian capital. In a situation of such a far-reaching unilateral change in reality, the “leap” to the enemy’s cognitive collapse was quite small.

It is particularly interesting that enthusiasts of the EBO cognitive battle ignore the fact that in many cases land maneuvers generate a far greater effect than standoff fire. The scenario of armored forces occupying the courtyard of the enemy’s parliament while the soldiers eat in the government cafeteria has a far stronger cognitive effect than a bomb dropped on the parliament building at night from a distant plane. A ground force reaching the fence of the enemy’s headquarters will unseat it and paralyze it in a far more dramatic fashion than a guided missile hitting the headquarters’ armored outer defenses. Encircling an enemy division, cutting its supply lines, and threatening to isolate it

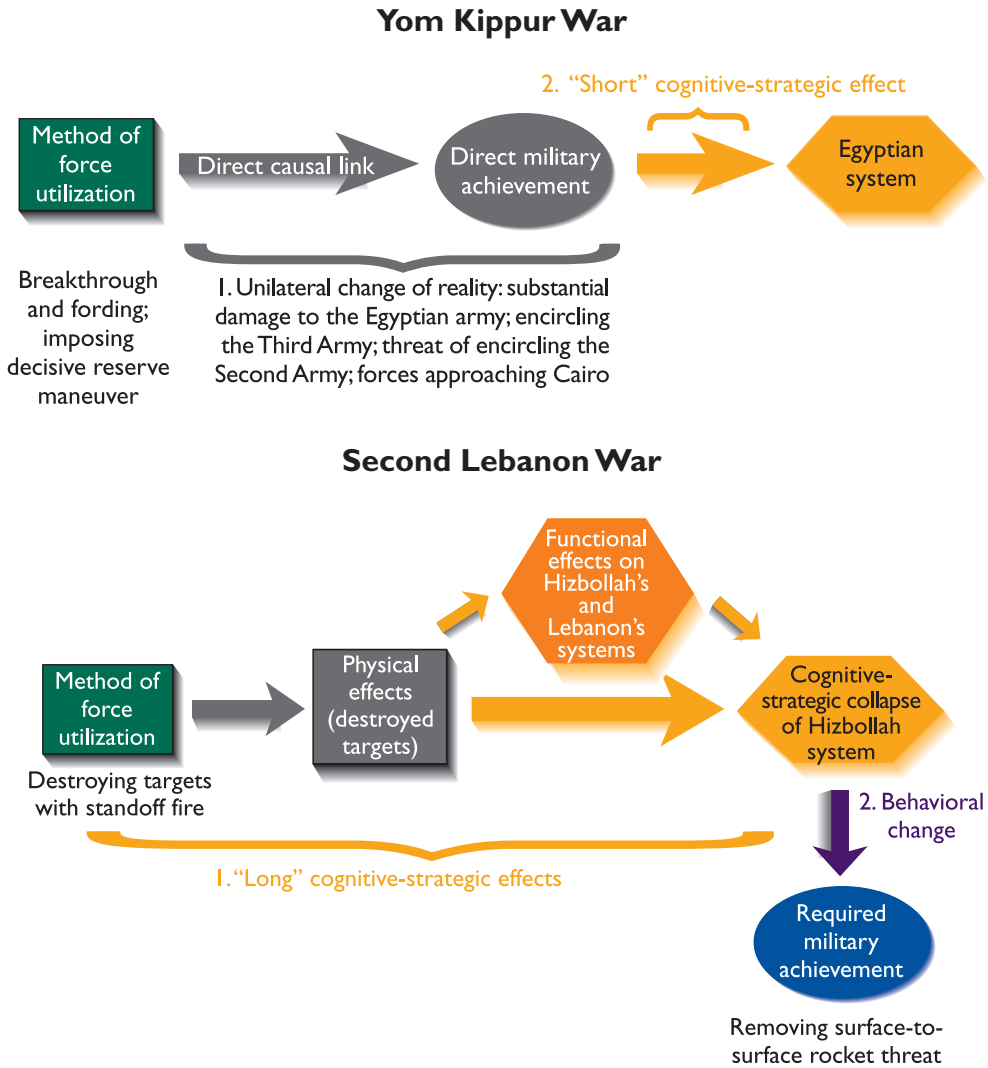


Figure 2. Paths to Cognitive-Strategic Effects

can generate a far stronger sense of distress and of being pursued than destruction of its armored vehicles with remote precision weapons. Indeed, the IDF's advance on Damascus in 1973 and the bombardment of the city by Israeli artillery created a far stronger cognitive-strategic effect than the aerial attacks on the Syrian capital at an earlier stage of the war.

It is not at all clear if destroying thousands of small and mobile enemy military targets, alongside the destruction of dozens of high-value fixed targets of its senior military and political echelons, is sufficient to create a sense of victory – in military, public, diplomatic, and media terms. The question marks grow in circumstances in which the use of firepower is not unilateral (as occurred in battles waged by the United States overseas), rather where the enemy returns fire deep into one's territory until the very last day and as a final act to the war (as happened in the second Lebanon War, and as is expected to happen in any future Israeli war with Syria).

On the other hand, conquering territory is perhaps the greatest cognitive indicator of victory. Conquered territory acts as a political bargaining chip, and seizing territory may significantly shorten the high intensity stage of the war (although with a Third World dictatorship, toppling the government exacts an even heavier toll than seizing territory). This is particularly true in wars in the Middle East in view of the great importance of territory in the Arab public and political culture. Israel learned this lesson (even if as a sub-text) in the second Lebanon War when in the last days of the war an attempt was made to generate “a semblance of victory” through land maneuvers. However, it is very difficult to create a photo-op, or semblance of victory, without substantiating the victory in reality.

The Difficulty of Creating a Cognitive-Strategic Effect

Predicting the behavioral-cognitive effect on the enemy following the destruction of targets becomes more complicated the higher the rank and seniority of the enemy that is engaged, as the enemy's systems become more complex and its set of interests and considerations more extensive. This complexity is greatest when the desired effect is aimed not at the military system but at the political level. The effect on the enemy's political echelons becomes particularly elusive when the enemy's mentality, culture, economy, and society are different from one's own, or when the enemy acts emotionally, errs, or just does not understand the wider picture of the war. Moreover, in many cases the enemy might act irrationally, or at least irrationally in relation to one's own projections.

Consider, for example, North Vietnam's "irrational" reaction – in terms of cost/benefit – to America's Operation Rolling Thunder, which with gradual increasing escalation destroyed the governmental, industrial, and economic infrastructure of the north. Through 44 months of aerial bombardment, which saw close to one million metric tons of weapons dropped and the infliction of heavy damage on North Vietnam's physical infrastructures, Operation Rolling Thunder strove to break North Vietnam's will to fight. The operation was designed around increasing escalation that intended to convey the message that the subsequent stages of attack would be more damaging, and that at any one stage it would be in North Vietnam's interest to stop fighting, before the onset of the next, more severe stage. However, North Vietnam acted in an "irrational" manner and continued to support the Vietcong,

despite the severe escalation and the destruction of its political and industrial infrastructures.

The efficiency of SFO in general and the achievement of cognitive-strategic effects in particular are contingent on a large number of variables, such as the enemy's determination, the success of the enemy in inflicting reciprocal damage, the enemy's assessment of the attacker's ability to sustain prolonged SFO (in military, public, and diplomatic terms), the degree of democratization and dependence of the enemy's government on public opinion, the standard of living of the enemy's society, the level of industrialization of the enemy's economy and army, and a long list of other influential factors.

The goal of the system-of-systems approach to understand the enemy's systemic rationale is no trivial matter, particularly when it emerges from a cultural and mental background that differs so much from one's own. As Israel's enemies are Third World dictatorships, it is liable to be surprised by the relatively low level of sensitivity of an adversary's decision-making echelons to damage inflicted on the ruler's army, people, economy, and home front. When Israel engages a sub-state terror organization, it is likewise liable to be surprised by the lack of sensitivity to damage inflicted on the host country (as occurred in the second Lebanon War). And when the enemy's internal political system is alien (as are, for example, the inter-ethnic systems in Syria and Lebanon), the enemy's decision-makers may act according to internal political considerations that are hard to identify, predict, and analyze ahead of time.

Moreover, even industrialized democracies with a high standard of living do not necessarily reach cognitive and strategic collapse when they sustain heavy high-output fire. Britain withstood nine months of aerial attack in the Blitz, when hundreds of German bombers attacked London every night, resulting in 43,000 fatalities and 139,000 injured civilians. In addition, one million houses were damaged and the national infrastructure (including the Parliament building, the royal palace, government institutions, and air and sea ports) suffered serious damage. However, the Blitz, as with the offensive on London with 4,000 V-1 and V-2 missiles later in World War II, did not bring Britain to cognitive collapse or generate any notable strategic effect. Annihilation

of Germany's industrial sector in World War II did, in fact, have some impact on its operational effectiveness (even though Germany did not reach strategic collapse following the aerial attacks that destroyed its industry and cities and killed two million German civilians, but only as a result of the Allies' ground operations). In contrast, the decimation of the North Vietnamese industrial sector did not generate a cognitive effect, or even a significant functional effect, on Hanoi's will and ability to continue supporting the Vietcong.

Another critical factor concerning the ability to generate the desired cognitive-strategic effect is the amount of time required for standoff fire operations to take effect, and which side is more sensitive to the time that elapses. It is very hard to assess in advance how much time is needed for firepower to bring the enemy to cognitive collapse. The experience gained in Kosovo and Lebanon indicates that if this is at all possible, the timescale required is perhaps months, and not days or weeks. However, a protracted period of time is a double-edged sword whereby the initial psychological effect may evaporate and the enemy becomes inured to it already during the war. Experience shows that after the initial shock, the impact of a cognitive military action is liable to dissipate (for example, the Blitz of London; the Iraqi Scud attacks on Iranian towns; and Israeli operations against the Palestinians and in Lebanon).

Moreover, breaking the enemy's will is hard to achieve when the enemy is by definition in a temporary situation (being subjected to bombings), and all it needs to do to extricate itself from this state of affairs is to be patient and wait. This is even more relevant in circumstances when the enemy largely knows what to expect (in Israel's case, aerial attacks on the enemy's government and army assets), together with a high degree of certainty regarding what not to expect (Israel is not wont to embark on ground maneuvers deep into enemy territory, will not surround the enemy's army, will not conquer its capital, and will not occupy its country). This certainty bolsters the enemy's patience, tolerance, and ability to withstand the aerial bombardments.

On the other hand, in view of Israel's tendency to finish wars quickly and at low cost, and in view of the structure of the Israeli economy and Israel's sensitivity to public opinion and international diplomacy, it is

highly likely that it is Israel that is more sensitive to protracted wars and, as such, this form of warfare is unsuitable for its specific circumstances. It is enough for the enemy to demonstrate tolerance and obstinacy for an additional period or implement diplomatic delay tactics – or for an operational error to occur that results in civilian casualties – for Israel's time to run out.

Managing Effects-Based Operations

Standoff Firepower-based Operations and, in particular, Effects-Based Operations, are complex and difficult to manage and command. First, the discipline in itself is complicated, reading and understanding the orders is at times an exhausting task, and the terminology used – either by choice or due to the nature of the subject matter – is not necessarily accessible to the numerous officers who are supposed to carry out the orders. Second, the sometimes abstract nature of the required military achievement leads to communications lapses within the military chain of command and difficulty in monitoring the advance toward the realization of non-physical effects. The simple and straightforward commands of the past are replaced by ambiguous complex formats that are open to interpretation.

When, for example, there is an order to create “a sense of being pursued,” it is not self-evident what steps the subordinates are to take, or in SFO terms, where to aim the sensor and at what targets the shooter should fire so that the enemy feels pursued. Moreover, tasks with a cognitive objective involve difficulty in evaluating progress and success in carrying out the mission. In classic warfare the commander sets measurable interim objectives that allow assessment of progress and success (for example, the campaign objective is to reach line x, whereby the interim objective of the next 24 hours is to reach line y). However, in cognitive effects-based operations it is hard to set milestones for assessing success, as the interim effects cannot generally be assessed; nor is it possible to define in percentages progress toward attaining a cognitive effect or the expected behavioral change. It is very difficult, for example, after 72 or 96 hours of fighting to determine that

a 33 percent sense of pursuit or 25 percent progress towards cognitive-strategic collapse has been achieved.

Directing the battle thus requires adoption of effect realization indexes that purport to represent and simulate the desired effect (simulation by means of a proxy index or intelligence indicators). Thus, for example, one could make an arbitrary decision that when 40 percent of the armored vehicles of an enemy division have been destroyed, the sense of pursuit has been created, whereby destruction of 20 and 30 percent of its armored vehicles constitutes an interim objective (similar to definitions of suppression, neutralization, and the like). However, these are of course imprecise instruments, and if we try to apply them, for example, to the erosion of the Israeli forces that defended the Golan Heights in 1973, to the destruction of the assets of the US fleet in Pearl Harbor, or to casualties in the battle of the Soviet forces that defended Stalingrad, we will see that these measurement tools do not contribute to an assessment of the non-material effect of destroying targets. In each of these three examples the physical casualties only served to heighten the fighting motivation of the side under attack.

Undoubtedly on the tactical level, battle damage assessment (BDA) objectives can be set for the firing formations, such as destroying 500 or 1,000 targets. However, at the level of the campaign theme and the strategic level, in the cases where the objective is defined in terms of a cognitive non-material effect, assessment of the success and progress must ultimately also be considered in terms of direct effect realization. In the absence of a reliable measurement it is not clear when we are not living up to the plan and the commander should make the appropriate management decisions (such as changing the modus operandi, changing mission priorities, or relocating resources).

On the face of it, these are technical issues that require a technical solution, but ultimately wars are waged by people, and in order to achieve victory they have to understand their mission. In order to direct the campaign the commander must understand how the campaign is progressing and what decisions should be taken in view of progress with the plan or a lack thereof.

Indeed, difficulties of this nature were experienced during the second Lebanon War, when Israel's General Staff struggled to assess

whether or not the IDF was successful and at what levels to determine success or failure (there are those who say this very question of success or failure is still unclear, even today). It is possible that this is one of the reasons why the IDF *modus operandi* was not changed during the war despite the deep-seated feeling shared by many that the campaign themes were not bearing fruit. After a week or two, after 3,000 sorties and 30,000 artillery shells, it was possible to stop and reexamine the practicality of the campaign themes and the need to change them. However, the consensus of the General Staff was that the train was progressing at full steam, and another bombardment and another shelling would bring Hizbollah nearer to cognitive-strategic collapse. In the absence of reliable indexes and management tools, it was not possible to substantiate or disprove the gut feelings and consensus while the fighting progressed.

The picture becomes even more complex in relation to an order to generate an effect such as “weakening Hizbollah.” First, it is not clear where the sensor should be pointed and at what targets the shooter should aim in order to weaken Hizbollah (and in the broader context to assess if Hizbollah is at all weakened, or has actually gained strength in the Lebanese political system during the SFO campaign against it). Second, it is difficult to gauge progress during the fighting as to realization of the order, in other words, estimating how much Hizbollah was weakened after one week or two weeks, and when to declare that Israel has achieved sufficient success.

In order to contend with the difficulties of SFO management, highly specialized methods for situation assessment and warfare conduct were developed. However, these methods are necessarily complex and more experience is required before it will be possible to decide on their practicability on a wider military scale, beyond that of the select intellectual elite in control of an aerial force or a special operation.

In fact, SFO management methods are somewhat contradictory. On the one hand, the basic guideline of intelligence and SFO management is total awareness of the situation on the battlefield (dominant battlespace awareness). On the other hand, the basic principles of force utilization include damaging the enemy’s communications networks and making its system “incoherent.” Yet when the enemy’s known communications

networks are damaged, it is impelled to use improvised alternative methods of communication and even create communications redundancy in advance. In such circumstances, dominant battlespace awareness is harmed, which compromises the ability to fight the enemy as a system efficiently. Not surprisingly, most armies in the past chose not to damage the enemy's known communications systems, so that it would continue to use them and continue to allow obtaining quality intelligence. Similarly, inflicting damage on the enemy's system-of-systems and making it "incoherent" is liable to make the enemy unpredictable and blur the battlefield.

The SFO Ground Force's Modus Operandi and Abilities

The accepted SFO theories generally incorporate a maneuvering ground force that differs from the classic land formation. This ground force is known by different names in accordance with the specific SFO approach, such as the light land component of “the dynamic molecule” in Israel. This type of ground force is light, fast-moving, and has a low signature, and thus does not normally use tanks, armored personnel carriers, and organic heavy support elements such as engineering and logistics. In practice, the SFO-maneuvering ground force is not much more than a forward observation team, and as the ground force is compact and light, it has to rely on a rear control desk and on long-range sensors and fire elements “pulled from the medium” (in IDF terms, elements or services that are not organic but are supplied by a higher level of command). Thus, most of the fire initiated by the ground force is “pulled from the medium” (i.e., the ground force only tracks and directs fire at the target), and only a small part of it is organic (whereby the ground force does the firing itself).

This approach has a number of limitations. First, relying on sensors, firepower, and even logistics “from the medium” impinges on the autonomy of the ground force and, in contrast with the idea of decentralization that seemingly lies at the base of the SFO concept, makes SFO more centralized than the classic system. In practice, firepower (particularly the heavier and longer range fire) is centralized at the operational or at least high tactical level, and it is only guided by a network of forward observers. Similarly, it should be noted that the ability of the ground force to rely on the rear control desk and on

the sensor and long-range firepower is dependent on the existence of constant and uninterrupted bilateral wireless communications. The survivability of the ground forces when the enemy manages to disrupt communications between the ground force and the desk or “medium” is questionable, and SFO designers have not offered a clear solution to this potential threat. In contrast, the classic formation can even operate with flag and light signals, advance autonomously, and engage and destroy the enemy.

Second, one of the main ideas behind SFO is force efficiency and a transition from “linear” warfare to decentralized warfare. Simply put, while the classic war involves only one's own advance force and the enemy's advance force, with the main body of the two sides' forces waiting in the rear, SFO tries to generate a situation in which all of one's forces fire simultaneously at the enemy's entire deployment throughout the depth of the theater. Herein arguably lies a distinction of the SFO design from the classic doctrine whereby only about one fifth of the main ground forces are engaged at any one time, while the other forces secure the flanks and the rear and serve as a reserve force for unexpected developments. The argument is that the technological revolution enables one's forces not only to fire simultaneously deep into the enemy's formations but allows them to dispel the battle fog as well. According to some SFO designers, this means there is no longer a need to expend forces on reserves and on securing the flanks and rear.

Hence, not only is the SFO ground force light and devoid of tanks, but it also lacks reserves that secure its flanks and rear. All this is based on the assumption that the sensors generate a perfect picture of threats and provide sufficient warning to allow the force to avoid close contact with the enemy. The light ground force is not designed for close confrontation, and it is unclear how it would survive if thrust into such a situation.

However, in the real world it is not possible to guarantee a perfect picture of threats, and it is enough for the enemy to disrupt the data communications or the sensors, or for the weather to be poor – which makes it difficult to collect airborne information – or for the fighting to take place in an arena with problematic relief or cover features for the famous battle fog to return. Without a perfect picture of threats (and

in the absence of a sufficiently good picture of the targets), the SFO ground force may be paralyzed. SFO also promises a minimal number of one's own casualties, both because it operates through standoff fire and also because of the low signature of the forward ground force. Yet in situations where despite this promise casualties are nonetheless sustained, it is one's own military and political systems that may suffer an effect of paralysis (as happened on a number of occasions during the second Lebanon War). This concern increases in light of the growing public concern with avoiding casualties, a view that comes at the expense of completing the mission.

That deployment of the SFO light ground forces is contingent on a perfect picture of threats is thus a troubling idea. It means that the force will not be able to function in all theaters, in all situations, and in all weather conditions, and it depends on suitable conditions. It is also not clear how it will operate prior to obtaining aerial supremacy, as in the first days of the Yom Kippur War, as the ground force is almost entirely dependent on the airborne sensor and shooter. This is, therefore, a force that by definition is capable of providing only a partial solution and that requires the support of the classic formation to ensure survivability and effectiveness against the enemy – also in conditions that exceed the envelope of the perfect intelligence required for the light ground force when it operates alone.

In presentations and the professional literature, SFO theorists often describe the operation of the light ground force in an empty, homogeneous space that in its neutrality is more reminiscent of the aerial and sea theaters than a specific ground theater, with all its complexity. The Americans may have extenuating exigencies due to the possibility that they will be called upon to act anywhere in the world, against a variety of enemies (some known, some unexpected), and in a variety of battle situations. As such, they need universal or generic capabilities. However, in the case of Israel, the number of war scenarios is sufficiently limited and the capabilities are tailored to specific contexts, and therefore Israel must verify the survivability and efficiency of the light ground force while maneuvering in very specific theaters of war, such as crossing the Saluki wadi in southern Lebanon or along Syria's Kuneitra-Damascus road. Each such theater presents a unique and serious range of challenges.

The Saluki wadi, representing one type of theater, is a cleft region with an abundance of elements that offer rich cover (thick vegetation in the ravines and tightly packed villages on the wadi slopes). As demonstrated in the second Lebanon War, even when the theater is saturated with intelligence collection means, including airborne optic collection assets, the ability to identify threats and targets in such conditions is limited, particularly in the context of low signature guerilla forces. Despite the presence of unmanned aerial vehicles (UAVs) it is patently possible in such a theater not to identify a concealed threat just a few dozen meters away – or less – from one's forces. Moreover, even when a concealed guerilla force is identified in the undergrowth or between terraces on the wadi slopes and the enemy is fired at with precision, sometimes the concealed enemy will be hit but not completely destroyed, and in many cases, the results of the fire are not known. A theater of this sort entails an uphill battle to generate a complete and updated picture of threats needed for the movement of the light ground force. In addition, almost every point in southern Lebanon navigable by vehicle is located just a few hundred meters from buildings, and no sensor is capable of positively identifying which buildings contain enemy forces. As such, close contact is inevitable in cases when land movement is motorized.

The Kuneitra-Damascus road represents a different arena, with heavy fortifications and obstacles covered by enemy fire. In such an arena one has the ability to create a good opening picture of the threats. However, there are two additional problems. First, experience shows that standoff fire alone directed towards an entrenched enemy can damage but cannot paralyze it. Time after time, it has been proven that even accurate and massive standoff fire is not capable of eradicating the enemy threat when the enemy is entrenched in a fortified perimeter. Second, after bombarding the enemy's fortifications it is very difficult to create an up-to-date picture of the threats, in other words, to ascertain where the enemy has been paralyzed and where it is still capable of posing a threat to one's forces. The sensor has difficulty identifying which enemy fortifications have been damaged but still contain armed live forces. Neutralizing and clearing a fortified arena requires entering the fortifications, and the light ground force is by definition not built to do this. As such, it is doubtful whether the SFO ground force is able

to obtain an up-to-date picture of threats adequate for maneuvering in a fortified area that has been attacked by standoff fire, and it is certainly unable to take upon itself the task of penetrating and clearing the fortified area, which requires a fierce confrontation with the enemy.

The Syrian front is not a comfortable theater for the light SFO ground force, as inevitably progress in such terrain is slow due to the need to overcome obstacles and occurs under heavy direct and indirect fire. In such an area it is not possible to realize the potential of rapid movement and in view of the large number of enemies and short ranges, it is questionable whether reducing the signature is of significance. In an exposed arena and in ranges of one or two kilometers, the light force (particularly if it is motorized) will be discovered almost as easily as the classic force. The light ground force may be suitable for exploiting the breakthrough after the classic force has breached the enemy's lines, and can possibly advance rapidly deep into enemy territory (in a less fortified terrain with fewer obstacles, and with a relatively small number of enemy personnel).

There is no question that by itself, even the heavy armored formation has fundamental problems of survivability and problems of executing missions while maneuvering in an area such as southern Lebanon or along the main Syrian defense line. The solution for such conditions lies solely in an integrated and balanced force that incorporates heavy and armored elements as well as elements capable of light maneuvering; armored combat vehicles as well as infantry; direct low-trajectory fire, high-trajectory fire and precision standoff fire; and, naturally, engineering and logistics support.

The argument here thus does not negate the idea of a light land scouting force, rather emphasizes the need for it to be complemented by a classic formation.

The Experience of Four Wars: Lebanon II, Afghanistan, Iraq, and Kosovo

In recent years, four wars have involved the use of SFO or SFO elements: the second Lebanon War, and the United States' wars in Afghanistan, Iraq, and Kosovo. These four wars were not waged against equal adversaries but against sub-state organizations and against isolated and underdeveloped countries that did not have the backing of a patron superpower. Therefore, it is dangerous to draw sweeping conclusions from these four wars. This caution is particularly advisable when an attempt is made to interpret the said wars as a trend that substantiates SFO ideas, rather than in an objective way.

There is of course a great difference between the four examples. Hizbollah is a sub-state organization that enjoys the backing of Syria and Iran, which, although they are powers on a Lebanese scale, on a global scale are isolated and underdeveloped states. Hizbollah is equipped with some new weaponry (such as anti-tank missiles), but most of its arms are old, for example, its short-range surface-to-surface rockets that are based on World War II technology. Nonetheless, of the four examples examined here, Hizbollah prepared the most efficiently for survivability and for contending with SFO.

It should be noted that even the developers of the EBO concept say there are three prerequisites for its use: first, the enemy is organized like a system; second, the enemy's system has critical vulnerability nodes; and third, those ready to launch the effects-based operations are familiar with these nodes.⁸ While Hizbollah is based on a systemic structure, the second and third conditions are not sufficiently extant: on the one hand, Hizbollah has a flat, decentralized structure that incorporates

a network of autonomous cells with high redundancy. On the other hand, it has almost no clear vulnerability nodes or an operational center of gravity whose destruction would bring about the collapse of the other branches. The organization's command centers during combat comprise no more than two or three personnel who relocate to an ordinary apartment in an ordinary town or village at the outbreak of the fighting. Internal organizational communications are minimal, simple, and of high redundancy. The fighters, weaponry, and supplies are deployed in advance, and Hizbollah does not generally need to move forces or supplies around. Such an organizational structure has very low sensitivity to functional effects. In addition, Hizbollah operates with low signature, both by hiding in “nature reserves” (a system of bunkers concealed in wadis) and by blending with civilian populations. It largely operates without concentrating its personnel and weapons so as to avoid creating the critical mass necessary for the sensor or shooter to identify a comprehensible target.

Thus, in excess of 160,000 artillery shells, 15,000 sorties (including 7,000 strike sorties), 1,800 rockets carrying hundreds of thousands of small bombs, and 8,000 sailing hours, including 2,500 offshore bombardments, only achieved the destruction of several dozen high quality targets and the death of 200-400 Hizbollah fighters (excluding Hizbollah personnel killed in ground battles). Due to the structure of Hizbollah, which was planned in advance to withstand SFO and therefore made Israeli fire less effective, Israel failed on the strategic, operational, and tactical levels. Israel did not succeed in generating decapitation, paralysis, blindness, or any other effect that substantially harms the will or functioning of the organization's command and control echelon. Nor did it succeed in suppressing the operational effectiveness of Hizbollah's combat groups and light surface-to-surface rocket formations. At the end of the day, Israel did not upset the equilibrium of Hizbollah's system and did not create a sense of helplessness and distress, nor did it push the organization towards cognitive-strategic collapse and a drive to end the war immediately on Israel's terms.

Hizbollah, however, is nonetheless based on a systemic structure. A more extreme case of an asymmetric enemy that is not sensitive to SFO and effects is an enemy that is not based on an organizational

design at all. Thus, for example, some of the terrorists in the Gaza Strip are loosely-linked small groups and local gangs that do not answer to a central authority. Some seem to have more in common with the undefined group of fans of any soccer team than a military organization with a clear structure and hierarchy. A similar reality may be discerned today in al-Qaeda, which is more a source of inspiration and role model of sorts for independent local groups than a command controlling deployed forces.

Interestingly, al-Qaeda prior to the occupation of Afghanistan was more cohesive as an organization and therein contrasted with the Taliban, which governed the country but fought more like a sub-state organization. Common wisdom depicts the Afghanistan war in terms of SFO versus an asymmetric enemy, but a more accurate description is a war between two forces with symmetrical tribal features (the Northern Alliance against the Taliban and al-Qaeda), where one enjoyed advanced air support. With regard to the functioning of the sensors and precision weapons, the collective memory is also tainted by slanted interpretation. Operation Anaconda, one of the major American operations in Afghanistan, provides a useful illustration.

The American forces were given two weeks advanced warning to prepare for the operation, and it was conducted in a circumscribed area of ten by ten kilometers. The arena was laden with every kind of intelligence gathering means available to the American forces, operational and even experimental, visual and electronic, and those operated from satellites, from aircraft, and from UAVs. Every American force that was dropped by helicopter in the theater was protected by four UAVs and benefited from a wide range of high quality aerial support, jets and combat helicopters. Nonetheless, some of the American forces were dropped right on camouflaged al-Qaeda compounds, while others sustained mortar fire while they were dropped or while they were moving without the sources of fire being identified. Apache helicopters were hit by Stinger missiles and light arms fired by an unidentified enemy and as a result, the combat helicopters were withdrawn from the theater, some of the airborne force landings were canceled, most of the daytime helicopter missions were canceled, and even some wounded soldier rescue operations were postponed until nighttime. Most of the

potential of American firepower was not realized due to the difficulty in identifying targets, and at the end of the battle, the Americans assessed that around one half of al-Qaeda personnel had not been tracked by the sensors. In other cases, the UAV operators had difficulty differentiating between friendly infantry and enemy forces. The enemy compounds that were identified, including an al-Qaeda force that took up position in an abandoned Soviet compound, sustained days of intensive aerial bombardments and continued to return fire and fight until they were overrun by direct land assault. It is clear that the American fire did not generate cognitive effects on al-Qaeda fighters and did strip them of their will to fight.⁹

Operation Anaconda shows that often the ground theater is not easy to decipher with intelligence and does not supply ready targets, and that a clever, learning, adaptive, and tenacious rival can act successfully against the sensor, against aerial fire, and against light and unarmored ground forces. In fact, al-Qaeda's assumption of concealed positions and its taking local and unexpected initiatives created battle fog, despite all the sensors hovering above. It should be noted that one of the basic ideas behind SFO is "to see first, understand first, decide first, and shoot first" (in American parlance, Quality of Firsts); however, despite the availability of an enormous arsenal of sensors and armed systems, the Americans failed in Operation Anaconda in each of these four imperatives. At the end of the day, the Americans won the battle but this was due to their fighting spirit, aggression, and dedication to the task in hand, and by virtue of a combination of precision weapons and classic and "outdated" activities of combing the area, search, and direct assault (most of which were not planned in advance).

The 2003 Iraq War, which many deem the ultimate proof of the success of SFO, demands far more careful analysis. On the strategic-political level, the Shock and Awe operation that opened the war was a clear disappointment. The Americans did not manage to achieve an effect of decapitation (either on the political level or on the senior military level), and did not succeed in effecting the enemy's loss of will to fight and thereby bring the war to an immediate end. Overall, in campaigns designed to bring down a regime that may even end in the deaths of the rulers, it is unrealistic to expect that destruction of

targets – as massive as they may be – will lead to a regime losing its will to continue fighting. And, as the Iraqis expected this kind of attack, they did not concentrate their command positions and communications in known locations. Instead they dispersed, protected, and concealed the command headquarters and communications in dozens of small and innocent-looking civilian buildings. The picture-perfect attacks captured by the foreign TV channel cameras in Baghdad concentrated on the destruction of known government and military buildings that were abandoned even before the first bomb fell. As a result, Shock and Awe did not even succeed in generating effects of paralysis or blindness (at least not on the strategic level, although in certain operational branches paralysis and blindness were achieved). The strategic achievement required in the war was attained largely due to classic methods of advancing on the capital, and seizing it.

On the tactical level and even on the operational level, the Americans succeeded in destroying a large number of targets, but this was mainly in cases when the Iraqi military was deployed in clearly visible armored vehicles formations along the exposed desert plain, in fixed positions protected by no more than frontward soil embankments. The Iraqi military carried out almost no maneuvers to shorten the time the targets were visible and did not provide its forces with rigid positions, overhead protection from aerial attack, countermeasures, or camouflage that exceeded the symbolic. However, when the Iraqi army dispersed, took up position in areas with good cover and rich relief, withdrew into towns, or camouflaged itself, sometimes behind a civilian front, the Americans did not succeed in creating sufficient targets for feeding large quantities of fire that would fundamentally impact on the nature of the battle (in areas with abundant cover a large number of American combat helicopters were also hit and were then withdrawn). In these cases the Americans gained victory because they deployed a balanced force suited to the various circumstances. This included standoff fire along with direct fire, maneuvering, and shielding, a combination of airborne, land, naval, and special forces, and an SFO capability together with a range of classic abilities of search, combing, confrontation, assault, destruction, and territory seizure.¹⁰

Again, the 2003 Iraq War was waged against an underdeveloped

country that had been in isolation for twelve years with an army that had barely functioned prior to the outbreak of the battles. It nearly froze completely when the fighting started, it was unmotivated, and lacked initiative, creativity, or the ability to adapt. This war reflects more the extraordinary than the ordinary, and it is dangerous to draw sweeping conclusions from it.

The most interesting of the four examples is the war in Kosovo. This war was conducted against an enemy that was neither a failed entity nor entirely underdeveloped, but was not an equal adversary vis-à-vis the Americans. Serbia was not a democracy, but in contrast with the Middle Eastern dictatorships Milosevic's regime was forced to take internal Serbian public opinion into account and needed public legitimacy. Moreover, Serbia's civilian economy and its political infrastructure were important to the regime, and the Serbian military was certainly sensitive to attacks on its country.

The Americans and NATO planned an aerial assault that would last only five days, but they encountered a series of objective problems, including difficulty in collecting intelligence as to targets due to the cloud cover and the jagged topography and abundance of natural cover. However, the most serious difficulty stemmed from having to contend with an animated, inventive, and proactive rival: first, the Serbs concealed aerial defense radars and deployed surface-to-air missile ambushes. This forced the Americans to fly at altitudes above 15,000 feet, what considerably impeded their ability to identify and attack mobile targets. As a result they had to focus principally on attacking fixed government and infrastructure targets. Second, the Serbs endeavored to disrupt the process of identifying targets by deploying real targets, allowing the US intelligence planes to identify them, and then replacing them with decoy targets. They also identified the American intelligence aircraft with land radars and related alerts to stop military movements in order to prevent tracking of moving targets. They made extensive use of civilian vehicles and camouflaged military vehicles. In the end, the Serbs surprised the Americans with their use of minority groups as a human shield for their army.

Despite the initial assessment according to which the aerial attack brought about the destruction of almost 800 Serbian mobile military

targets, subsequent analysis conducted after the battles ended indicated that the 38,000 strikes conducted over 78 days of fighting resulted in the destruction of about 50 mobile army targets only – less than 5 percent of the regular Serbian forces¹¹ (other sources report the destruction of about 200 mobile targets, but even a 20 percent reduction after 78 days fighting is not particularly impressive). On the other hand, the NATO air forces did “succeed” in destroying about 500 decoy targets.

The Americans and NATO ultimately achieved their political objectives, partly due to a change in the Russian political position and following the threat of a land invasion should the aerial campaign fail. In addition, Milosevic's sensitivity to public opinion and his public legitimacy far exceeded concern of this nature among his Arab peers. Accordingly, the American aerial attacks did create an internal Serbian political effect. However, the Americans undoubtedly failed to destroy mobile targets from the air. This failure resulted from the fact that the war was waged against a dynamic and unpredictable enemy that was familiar with the theater and successfully preserved the battle fog, even in the presence of far more advanced sensor technology than the technology that was available to it. Kosovo, once again, proved that war is not a calculable mathematical algorithm but a dynamic, changing, and complex human experience that occurs under conditions of pressure and exhaustion, and involves coincidence and errors by all the parties involved.

The Enemy's Adjustment to the Concept of Standoff Fire

Despite the lip service paid by some SFO planners to the enemy by terming it “an adapting system,” one misconception shared by many supporters and planners of SFO is the assumption that the enemy will maintain its force structure and set of capabilities. However, in reality the enemy often learns and adapts itself to changing circumstances, rebuilds its force, develops new abilities, and tries to block its adversary's plans. As Clausewitz observed, “War is a contest against an animate force that resists our efforts at every turn.”¹² As such, all worthwhile planning must be based on appreciation of the enemy and its cleverness, and must avoid underestimating it.

No Western military has engaged an equal adversary since 1973 (except for possibly limited confrontations such as the Falklands War or the fighting against the Syrian army in 1982), and it is dangerous to project from warfare against weak and sub-state enemies to all-out confrontation against an equal adversary. Indeed, in the past 34 years, no Western army has experienced serious ground maneuvers on the part of an enemy's regular army or experienced a serious counterattack at a high tactical level or on an operational level, and it is hard to assess how SFO theories would withstand an enemy advancing suddenly and rapidly towards one's SFO formations. The fact that there have been no conventional high-intensity wars between equals for 34 years does not necessarily indicate the end of the history of confrontations between equal militaries any more than it suggests a temporary interval only.

In the case of Israel, it was the perception of Israel's having a superior and dominant “classic” military force that reduced the threat of regular

high-intensity war from potential enemies and channeled the Arab-Israeli conflict to the realms of terror and surface-to-surface rockets. However, the erosion of the classic Israeli strength following years of cuts in building, equipping, and training the force along with erosion of the perception of Israeli strength resulting from the failure of the second Lebanon War, returns the regular classic confrontation to the range of potential developments to be considered.

The intelligent and equal adversary is able to try and disrupt one's plans in two ways: by developing abilities similar to one's own abilities (symmetric) or by developing contrasting abilities (asymmetric). With regard to symmetric abilities, experience indicates that it is not possible to maintain a technological monopoly or a monopoly on the concept of force utilization. For example, following the revolutionary way the Germans used a train network to transport its forces in wars in 1866 and 1870, the French and Russians also invested enormous sums of money in building train infrastructures and in 1914 met the Germans on an equal footing in this domain. After the initial shock of the German blitzkrieg, the Soviets built a superior armored force and masterfully conducted large-scale and rapidly moving battles until they reached Berlin. Today more than ever, technology is accessible to anyone willing to pay the price, and in many cases, civilian technology is better and cheaper than military technology. If in the past military technology was adapted for civilian use, today civilian technology is mobilized for military use.

An equal adversary is also able to develop successful asymmetric abilities. Thus, for example, following the successes of the Israeli air force and tank corps in 1967, the Egyptians and Syrians built asymmetric anti-tank and surface-to-air missile formations that proved themselves in 1973. Today too, Egypt and Syria integrate symmetric with asymmetric abilities. The Syrians maintain forces and force utilization concepts based on large-scale commando unit and tank hunters with an abundance of precision fire abilities operating at low signature. These are asymmetric abilities for a Western force conducting a classic maneuver, but they are reminiscent specifically of the SFO concept. Historically, Israel was the maneuvering and decisive force while the Arabs tried to limit their own signature and use standoff fire. With SFO,

Israel has partly adopted the Arabs' battle concept and, as in the second Lebanon War, the result is liable to be two firepower-based campaigns operating in parallel, without maneuvering and without decision.

Any serious enemy, symmetric or asymmetric, will find the weak points in SFO. Ironically, the battle format designed to combat systems and their vulnerability nodes is itself a system with vulnerability nodes. For example, SFO assumes that one enjoys complete supremacy in the electronic space, as the entire system depends on intensive and continuous transmission of broadband wireless communication: transmission of an image or data from the sensor to the controller, transmission of operating instructions from the controller to the sensor, transmission of the target data from the controller to the shooter, transmission of target data from the sensor directly to the shooter, communication between the weapon system operator and the guided weapons, and so on. In addition, SFO is heavily based on reception from GPS navigation satellites, especially for guiding precision weapons such as JDAM. SFO is contingent on an ongoing symbiotic relationship with a number of elements via electronic media, and in contrast with its declared intention, incorporates almost no use of force with autonomous abilities – unlike the classic ground force that advances even in conditions of electronic silence, achieves contact with the enemy, identifies targets, and destroys them.

Moreover, the transition from a balanced military force with varied capabilities to a military force that emphasizes standoff fire makes it easier for the enemy to understand the relatively one-dimensional nature of the threat with which it has to contend and to deal with it accordingly (once again, in contrast with the declared intention of SFO to move from a linear threat to a simultaneous and multidimensional threat). If the enemy clearly perceives that what it is likely to face is largely a system of electro-optic sensors and attack by GPS-guided and electro-optic weaponry, the enemy will already find the appropriate countering means. However, when the enemy is faced with a balanced and diverse adversary endowed with versatile and dynamic capabilities, the solution required of it is far more complex.

As such, the enemy of reference would be one that also strives to achieve dominance in the electronic space, develop electronic warfare

capabilities in order to disrupt or jam transmissions of images and data, and achieve electronic takeover of its adversary's unmanned platforms and guided weaponry. This said enemy of reference would be able to saturate the theater with GPS jammers, with all that this entails in terms of navigating platforms and guiding weapons. It is liable to saturate the battlefield with multi-spectral smoke that will block electro-optic systems and lasers, with radar echo responders, with electronic and thermal chaff, and decoys (including decoys with visually, thermally, and electromagnetically deceptive signatures). The serious enemy of reference will specialize in camouflage, concealment, rigid positions and systems, cover, and tunneling, and will develop an ability to operate at rhythms that entail exposure for short intervals (in other words, after the enemy assembles or appears as a target it quickly disappears from its position). Later, the serious enemy will obtain advanced countermeasures, such as missile interception equipment, advanced surface-to-air missiles, and so on (the Chinese have even developed the ability to strike satellites).

The serious enemy of reference may attack in bad weather, in cloudy conditions, and in strong winds. This means that one will find it difficult to use optical systems and laser-guided weaponry, and fly UAVs or even jets and helicopters. It may opt for an urban arena with a large number of civilians (or in Syria's case it may choose to build border towns with the intention that they become part of the operational arena), conduct close-contact battles in which commandos and low signature anti-tank teams blend with the regular forces that face them, simultaneously expose a large number of targets and stimuli, and construct its force as a network of high redundancy autonomous units. One must also assume that sooner or later, the said enemy of reference will enhance the precision of its outmoded surface-to-surface rockets and surface-to-surface missiles, thereby achieving an inexpensive, accurate, and efficient means of inflicting damage on critical nodes of one's systems, such as airports, antenna arrays (for intelligence gathering, land reception of airborne platforms, and relay), and intelligence gathering and control bases.

Indeed, if we assume, for example, that the serious enemy manages to disrupt an essential part of a one's wireless communications, what

will happen with SFO and the war? In other words, is it appropriate and responsible to construct a military force and devise its operational concept (and, in fact, an entire national security concept) based on the assumption that one will always control the electronic medium undisturbed, and that at any given moment one will be able to carry out wireless transmissions of any complete item of information it chooses, from sensor A to the rear control desk, and from there to shooter B?

It may be possible to achieve decision using SFO if two concomitant conditions are met: the ability to inflict overwhelming and effective firepower on the enemy, and the ability to obstruct the large majority of the enemy's counter-fire. In order to be seen as victors, at least in the last phase of the war, firepower must be one-sided and unidirectional only. But at least in Israel's case, the enemy may want to emulate Hizbollah's success in the second Lebanon War and generate an equation of expensive precision firing by Israel against its own inexpensive and high redundancy firing, and achieve this by obtaining hundreds of surface-to-surface short and medium-range rocket launchers. Since such launchers are inexpensive, simple to operate, and can be acquired in large quantities, many can be lost during the fighting and the enemy will still be able to reach the closing stages of the war with the ability to generate significant barrages on Israel's strategic home front.

Saturating the combat with inexpensive high redundancy fire will provide the enemy with two important advantages: first, it will create constant pressure on the Israeli civilian rear, thereby possibly forcing Israel to divert sensors and precision weapons from trying to generate strategic effects to Sisyphean defensive missions of hunting down surface-to-surface rocket launchers. Second, an inexpensive and high redundancy surface-to-surface rocket array can continue generating fire for long periods, despite sustaining hits. And as was proven in Lebanon, in a war in which both sides continue firing deep into each other's strategic rear, there is no clear resolution, and each side can claim victory. This translates into Israel's failure.

In order to achieve victory in such conditions Israel must maintain its ground maneuvering capability for two reasons: first, whether in southern Lebanon, Gaza, or on the Syrian side of the Golan Heights, the efficient (if not exclusive) means of preventing launches of light

and medium surface-to-surface rockets is by seizing and controlling the areas from which launches are carried out. Second, land maneuvering for seizing enemy territory is the main way of generating an unequivocal cognitive effect of victory and punishment, even while one sustains ongoing hits on the civilian home front.

Insights from the Principles of SFO

While the new approaches should not be embraced with religious fervor, neither should they be summarily rejected. There are quite a few points that can be gleaned from SFO ideas and from the concepts that have developed around them.

If higher quality long-range sensor technology is available, it should of course be adopted. If there are new and better precision guided weapon systems, they should naturally be obtained. If maximizing the sensors' and weapon systems' efficiency requires modifying force construction and organization, these changes should be made (although limited to the individual units that operate the sensors and the weapons). If it is possible to integrate intelligence efficiently and share it quickly with numerous clients through a network, enhance situation awareness, and combat the battle fog, this should be welcomed.

However, beyond obtaining advanced technological equipment, the question remains to what extent it is worthwhile and effective for SFO ideas, or some of them, to impact on the approach to utilizing military force. Addressing this issue divides into levels according to the desired type of effect – physical, functional, or cognitive – whereby the answer for each level is not absolute and rather depends on the context.

The first level addresses achieving the physical effect (largely parallel to tactical level warfare). When, for example, the required achievement is to destroy exposed non-rigid enemy targets that have sufficient signatures such as, for example, concentrations of Syrian armored vehicles in exposed parts of the Syrian side of the Golan Heights, there is a good chance of achieving the required physical objective using high-volume standoff firepower. In this context, it is apparently

possible to carry out simultaneous destruction of the enemy's forces to the depth of the theater, and this naturally enhances the effectiveness of the combat.

On the other hand, when the required physical objective is to strike entrenched forces in rigid positions, such as the main Syrian fortifications, or when the required objective is to hit low signature enemy forces such as Syrian commando forces and anti-tank hunters and, in particular, in areas with difficult topography offering numerous concealment possibilities such as Mt. Hermon, the effectiveness of standoff firepower diminishes. Moreover, even when the required physical effect is a change in the reality in the enemy's own territory (such as, for example, when the required objective is compelling Hizbollah to comply with Security Council resolution 1701 and to remove its concealed weapons south of the Litani River), it is highly likely that in certain circumstances standoff firepower will be inadequate.

The second level addresses achieving the functional effect that aims to disrupt the enemy's functioning as a system (largely corresponding to operational level warfare). On this level, it appears that the added value of combining the concept of "the enemy as a system" with precision weapons is highest. When the required military achievement is, for example, to stop an enemy division advancing towards one's obstacle line, this objective can clearly be achieved by using long-range precision weapons to hit dozens of engineering vehicles (designed to overcome the minefields and anti-tank barriers) instead of trying to destroy all of the enemy's hundreds of armored vehicles. In particular, there are certain types of enemy systems such as aerial defense and air corps that are by their nature designed as systems with critical nodes that can be damaged, have their efficiency reduced, or be blinded with relative ease. Similarly, the enemy's functioning can definitely be hampered by inflicting damage on its command positions, logistics, and transport using long-range standoff firepower. And, in the right conditions, enemy reserves can be stopped, or at least delayed, on their way to the battlefield.

The idea of upsetting the enemy's operational effectiveness is not new, and has been successfully applied in the past. When America hit

the German train infrastructure in World War II, when it isolated the German reserves from the coastal defense lines in Normandy, or when the Israeli air force destroyed Syrian surface-to-air missiles in 1982, this was accomplished based precisely on these principles. However, in other contexts, the attempt to wage war based on a rationale of a system-of-systems failed. One need only recall the idea by US defense secretary Robert McNamara of fighting the Vietcong through system analysis and quantitative and systemic indexes. Thus, on the functional level too, when the enemy is not based on a systemic design (such as with regard to some terrorists in Gaza), or when the enemy's system does not have any clear vulnerability nodes or has high redundancy, or when it is difficult to gather intelligence and when one is not fully familiar with the enemy's weak nodes (such as Israel in the case of Hizbollah), one will find it difficult to generate the desired effects on the enemy.

In addition, there are battle situations in which it is difficult to generate functional effects even on a regular enemy or where the result of such effects will be limited. Large ground forces have in the past carried out successful attacks in radio silence and without orders received in real time (due to the concern of intelligence exposure or electronic warfare), and this is certainly the case with regard to static defense battles. Some battles end in victory due to the accumulation of local victories, even without overall systemic management. In the first days of the Yom Kippur War, for example, the IDF essentially did not function as a system, but the hundreds of "private" battles that were conducted in parallel, though detached from each other, accumulated into the successful blocking of the enemy. Therefore, if for example the required objective is to generate functional effects on the enemy forces that are not in motion but are entrenched in defensive positions, either on their own ground or after they have seized positions in one's own territory, it will be harder to realize the required functional achievement or at least its result will be on a more modest scale.

However, the holy grail of SFO is the cognitive effect, or the attempt to directly generate the enemy's strategic collapse by means of accurate long-range firepower. When the objective is to bring about a change in the will, motivation, intention, or behavior of the enemy,

success or failure is dependent on a large number of variables that are hard to enumerate, and it is very difficult to assess in advance the expected degree of success. Some of the many parameters that create the context of success or failure have already been discussed. However, in discussing the cognitive-strategic effect, we are in fact dealing with human psychology, where there are no precise prescriptions for success.

Nevertheless, for the sake of argument, we can say that the ability to achieve strategic war objectives by means of standoff firepower alone requires, at the very least, compliance with two convergent conditions: first, the existence of levers or weak points that allow the application of pressure on the enemy's decision-makers; and second, those levers or pressure points should have the "form" of targets suitable for attacking with accurate standoff firepower – in terms of signature, shielding, real time intelligence gathering ability, and so on (table 1).

		The enemy has weak points that enable exertion of strategic pressure	
		High incidence	Low incidence
Weak points suitable for attack by standoff firepower	High incidence	High chances of success	Lower chances of success
	Low incidence	Lower chances of success	Poor chances of success

Table 1. When Standoff Fire Achieves Strategic Effects

However, since Israel's enemies are Third World dictatorships and sub-state terror organizations, while Israel tries to identify the pressure points or the strategic levers to use on them, it has to be mindful of the gap that divides it from them and understand that the strategic pressure points that can be utilized may be very different from what it may assume as self-evident. The American system-of-systems approach depicts the enemy as a series of interfacing circles that encompass the leadership, the political system, infrastructures, information and communications,

transport, economy, fighting force, civilians, and allies. However, when one engages a Third World dictatorship and sub-state organizations one may be surprised by the relatively low level of sensitivity to damage inflicted on system components such as civilian political echelon and industrial infrastructures and even on the fighting force, as was demonstrated in the failures of Operation Rolling Thunder and in the second Lebanon War. Therefore, identifying the strategic pressure points must emanate from the enemy's perception of the world. In the case of Syria, for example, the regime of the Alawi generals may be far more sensitive to damage inflicted on the Republican Guard divisions that protect the regime around Damascus, or on the Syrian internal security forces, than on frontline divisions or even institutions of the civilian administration.

In circumstances in which the desired type of objective (physical, functional, or cognitive) and the context allow primary reliance on standoff firepower, the chances of success are still contingent on the range of elements previously mentioned, from favorable weather conditions to the enemy not having access to sufficient quantities of electronic warfare means, and other parameters: the time factor; the ability to neutralize the enemy's own strategic standoff firepower; and ability to ensure that the war does not end in reciprocal exchanges of strategic firepower, and so on.

And as a footnote to this chapter, it is important to note beneficial points that even if they are not directly connected to SFO and EBO by their nature, have emerged or been sharpened by the discussion. Thus, for example, the theory of effects-based operations correctly recognizes the need to improve the correlation between the required political achievement and the definition of the military objective, and by extension, the definition of the missions of the military force. Similarly, discussion of the new approaches has contributed to highlighting the methodology of predetermining the required military end state.

Conclusion: Choosing the Best of All Worlds

Examination of the military achievements that can be achieved through high volumes of standoff firepower indicates that in certain contexts SFO can act as the main axis of the fighting. However, in other contexts it is unable to attain the required achievement on its own or even make a significant contribution. SFO can thus exist only in conjunction with classic military abilities, but not as an alternative to them.

Innovative technology, destruction of targets, and effects in the right circumstances can contribute to achieving victory in war. However, they are not the heart of the war. In particular, when moving from the tactical level to the high operational and strategic levels, the classic command and thinking methods should be maintained, and caution should be taken against tunnel vision that focuses solely on destruction of targets. It is said that if the only instrument you have at your disposal is a hammer, then every problem looks like a nail. However, destruction of enemy targets is far from being the whole picture in warfare and, as emerged in the second Lebanon War, does not necessarily bring about the desired military and political achievements.

SFO strives to deal directly with strategy while bypassing the need to expend time and resources on frontline tactical confrontation (as Israel attempted in its initial campaign themes in the second Lebanon War). However, in practice, SFO incorporates an opposite danger, techno-tactical domination of the operational and strategic levels. SFO is liable to cultivate thinking at all command levels principally in terms of destroying targets and, as occurred in the first weeks of the second Lebanon War, even the General Staff becomes not much more than a center for target reports and monitoring. Strategy vanishes, the art of warfare dissipates, and there is no management at all other than the directive that more targets be identified and destroyed. There

is no surprise, trick, orchestration, or optimization of the available forms of battle and operational tools and, despite the lip service paid to trying to unseat the enemy, in practice this is difficult when the main threat generated is precision guided bombs that are predictable and homogeneous. Even the difference between defense and offense becomes blurred as in both, targets are destroyed by standoff firepower, and at times the respective lists of targets overlap.

Indeed, in the second Lebanon War the Israeli senior command and General Staff levels did not fulfill many of their traditional roles, and in fact it seems that under SFO practice they have relinquished the bulk of their tasks. The classic roles of senior command are mainly to decide on a transition between defense and offense, to decide about forwarding reserve forces at the point of decision, to decide when and how to exploit success, to choose from among several alternative forms of battle, to pursue the enemy's center of gravity, and to identify when the military forces have maximized their potential strength and success and the fighting should be ended. However, both in the original orders of the second Lebanon War and in the weeks that unfolded, no reserve forces were dispatched at a decisive time or to a decisive place. The campaign agenda of the second Lebanon War did not include exploitation of successes, the senior command adhered to the same battle format of destroying enemy targets through standoff fire throughout almost the entire war, and despite the lip service with regard to looking for the enemy's center of gravity, there was no attempt to damage important rear Hizbollah concentrations, for example, by using search and destroy missions on the Nabatiya Heights. The failures in steering the war to a successful culmination, particularly the failed design of the final ground attack, are beyond the scope of this paper, but suffice it to say that the standoff fire component of the war ebbed due to an inability to continue to generate quality targets in sufficient quantities, and not due to a decision by the senior command to stop the fighting at the point at which its strength and achievements were maximized (figure 3).

Cases where a view of the war begins to develop based solely on a prism of matrices, performance analyses, and statistics are faulty and dangerous. War is not an exact science, but a form of social science and psychology; and it is possible that war is in fact an art and not

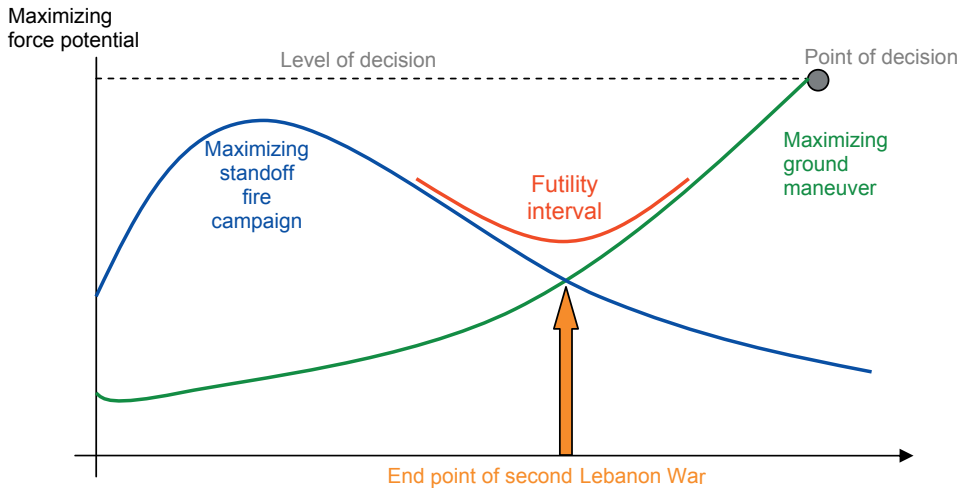


Figure 3. Force Potential and Operational Methods

a science. At the heart of war lie human variables that cannot be measured, including leadership, quality of management, experience, aggression, decisiveness, perseverance, commitment to the mission, focus, creativity, discipline, sacrifice, and courage. It is essential for victory that each fighter and commander feels that the fate of the entire campaign rests with him alone, and not as if he is only a cog in the wheel or just another element in the network.

In the Yom Kippur War Israel failed in terms of intelligence assessment; it failed in its operational design (for example, in building strongholds for rigid static defense along the Suez Canal waterfront); and it even failed on the techno-tactical level (dealing with surface-to-air missiles and anti-tank missiles). Nonetheless, it won the war, due to the quality and experience of the lower and middle ranking officers, determination of the soldiers, and responsibility taken for the fate of the entire war by fragments of depleted, exhausted forces. In even more extreme cases, Vietnam's Ho Chi Minh and China's Mao Tse Tung won their wars due to wise strategy, perseverance, and determination, and despite the fact that their armies were backward, had few technological resources, and did not win the main battles.

There are three reasons why at the heart of war lies the need for simplicity. First, the chances of simple operations succeeding are greater than the prospects for complex operations. In the conceptual lexicon of General George Patton, if it won't be simple, it simply won't be. Second, the war doctrine, work method, orders, and even terminology must be comprehensible not only to a select guild of experts and academics, but also to the large number of officers at all levels who are ultimately responsible for the execution of the orders. What is not accessible and clear is very difficult to implement. Third, the primary objective is not to win the war but to prevent it, and this is by way of deterrence. However the force offered by SFO is so abstract and difficult to grasp that it may not serve as a tangible deterrent. A deterrent is something that even a 70-year-old Syrian general who acquired his military education at Soviet war schools during the sixties and a 17-year-old Palestinian terrorist with six years education can grasp and understand its magnitude.

There are no universally correct decisions, and the leadership must steer developments in military affairs within the relevant context. In the current circumstances Israel has a technological advantage of an entire generation over most of its potential enemies, and thus at the present juncture acquiring new technological equipment should not be its main concern. A skilled, well-trained, organized, orderly, and disciplined military with a fighting spirit, which is decisive, aggressive, and committed to its mission, which has dynamic, creative, and responsible officers, is a better military than one that has the latest gadgets and whose officers are well versed in the most trendy terminology.

At least for the foreseeable future, only the military that plants its flag on the enemy's hilltop is the victor. The ultimate test of war still rests with soldiers overcoming the enemy's soldiers in face-to-face combat inside their fortifications. A military organization still has to grasp the complexity of the field, has to appreciate and understand the enemy, and must prefer carrying out the mission over limiting the number casualties.

Therefore, Israel should reduce the IDF's pace of change and adopt innovative ideas gradually, and only after experimenting with them and proving them on the battlefield. The risk involved in building a force

and designing its operational concept based exclusively on an unproven theory that may well prove to be incorrect is enormous. Discarding classic fighting capabilities is a dramatic process that cannot be reversed in any relevant timeframe, and thus it must not be pursued prematurely. No one knows what the future holds and thus when we posit how we should prepare for the battlefield of tomorrow, and caution and modesty are required. Evolution rather than revolution in military affairs is the order of the day.

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