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IN PURSUIT OF MILITARY EXCELLENCE

The Evolution of Operational Theory

SHIMON NAVEH

FRANK CASS
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general attributes.[9] Thus, we will provide our discussion with the correct and relevant context.

THE UNIVERSAL SYSTEM DIMENSION

In terms of Thomas Kuhn's definition of scientific revolutions, the system concept constituted a theoretical revolution, since it refuted the prevailing mechanistic outlook by means of a novel paradigm or philosophy.[10] Evidence of this revolution was manifest in the natural sciences, exact sciences, social sciences and humanities, as well as in the fields of management, business, industry, commerce, education and military conduct. The cognitive crisis, which generated the theoretical revolution, was born out of growing scepticism regarding the abilities of the prevailing analytical-mechanistic approaches to respond adequately to challenges posed by the complexities of modern society and technology. Consequently, the need for a new understanding, based on holistic and system approaches and of an extensive interdisciplinary nature, was recognized. The essence of this revolution, which was conducted simultaneously by scientists in various fields and in different countries, was characterized by Bertalanffy:

> It is a change in basic categories of thought of which the complexities of modern technology are only one – and possibly not the most important manifestation. In one way or another we are forced to deal with complexities, with 'wholes' or systems, in all fields of knowledge. This implies a basic re-orientation in scientific thinking.[11]

Moreover, the development of a new system cognition raised the legitimate need for a theory, not of systems of a more or less special kind, but rather for one applying to systems in general, based upon universal principles.[12] This, to a certain extent, is the justification for applying the theory of general systems to the field of military operations.

Basically, Bertalanffy defines a system as a complex of interacting elements.[13] Thus, a system's problems, according to Bertalanffy, are problems of the interrelation of a great number of variables, which occur in the fields of politics, economics, industry, commerce and military conduct.[14] Bertalanffy goes on to propose cognitive tools for criticizing and assessing systems, and offers three distinct parameters. The first is the quantitative parameter, which concerns the number of elements composing the system; the second parameter is about matter, since it concerns the species of the elements involved; and the third is a qualitative, or rather substantive, parameter that centres on

the attributes of the relations between the various elements within the system.[15] Accordingly, Bertalanffy identifies two basic categories of universal systems, the open and the closed:

> We express this by saying that living systems are basically open systems. An open system is defined as a system in exchange of matter with its environment, presenting import and export, building up and breaking down of its material components . . . Closed systems are systems which are considered to be isolated from their environment.[16]

This definition can serve us well not only by classifying military systems as open systems, but also by demonstrating the striking affinity between open systems in general and the field of military operations, since hierarchical organization constitutes the typical pattern for an open system, and unsurprisingly it reflects the main traits of the universal system:

> Characteristic of organization, whether of a living organism or a society, are notions like those of *wholeness, growth, differentiation, hierarchical order, dominance, control, competition* etc. . . . System theory is well capable of dealing with these matters.[17]

Clearly, the essence of a system centres on the existence of the interaction between its components more than on anything else and, by applying the universal experience, Bertalanffy identified the main characteristics of this interaction.

Since his basic argument presented the system's interaction as fundamental for its subsistence, Bertalanffy is correct in concluding that amplifying the dynamism of this interaction inevitably leads to an increase in the system's consequential product. However, according to Bertalanffy, attaining such dynamism prescribes that the nature of the interaction be non-linear.[18]

Applying this notion in a military situation requires a deep setting, hierarchical structure and a columnar mode of relation between the system's components, or between the sub-systems within the overall system. Thus, succession and echelonment constitute the first of the interaction's characteristics.

The second characteristic is the absolute dominance of the system's aim. The initial assertion of the aim by the system's brain or directing authority predetermines the comprehensive *whole*, i.e. the all-embracing accomplishment of its future destined action.[19] It also provides the focus of the system's performance since it creates the framework for the interrelations between its various elements and defines the orbit for the system's relations with its environment. In other words, the definition of the aim is the cognitive force that

generates the system and determines the directions and patterns of its action.[20] Thus, the deliberate exposition of the entire aim of a system's operation, which is made prior to its occurrence, manifests the holistic approach at its best. Moreover, it is this actual definition of the system's aim that indicates the focus of tension between the system and its rivals and the direction for releasing its internal stresses. And, finally, it is the abstract exposition of the aim that provides the system with its unifying determinant.[21] The acute importance of this cognitive unity derives both from the natural tendency of the elements to split from the system and from the fact that perpetuating cohesiveness within the system guarantees its self-regulating ability, which, in turn, enables the system to overcome the turbulence of external disturbances.[22]

Examining the relationship between the system and its components within the context of the aim reveals a dichotomy which seems to be the most complex aspect characterizing the system's existence. This dichotomy generates a certain tension, which is a crucial condition for the dynamic functioning of consciousness-driven systems. As already mentioned, the cognitive propagation of a system depends upon establishing its aim, which has both holistic and authoritative connotations. However, moving the system from a state of abstract, cognitive commonality to a practical course of positive progress can only be achieved by translating the overall aim into the concrete objectives and missions for the system's individual components. Thus, in order to accomplish its aim and so justify its existence, the system must steer itself as a total whole towards its general aim, and, at the same time, initiate a complex of concrete actions through its various components. In other words, the transformation of the system from a state of static anticipation always implies the existence of an intrinsic dichotomy. Moreover, since it is a dominant characteristic of the system's very nature, the permanent quality of contradictive tension, derives from the intermediary position of system occurrences between the mechanical context of random activity and the context of abstract thinking.[23]

The complexity of this dichotomous phenomenon, as well as its risks and implications, were pointed out by Bertalanffy:

> The positive progress of the system is possible only by passing from a state of undifferentiated wholeness to differentiation of parts. This implies, however, that the parts become fixed with respect to a certain action. Therefore, progressive segregation also means progressive mechanization. Progressive mechanization, however, implies loss of regulability.[24]

In order to harmonize this dichotomy and steer the system towards the achievement of its aim while forestalling the dangers of segregation and mechanization, modes of thinking must be utilized which are entirely different from those exercised in the traditional fields of tactics and strategy. Cognitive tension and a unique intellectual creativity, characteristic of commanders at the various echelons of operational systems, is a prerequisite which can only be acquired through a scientific process of training.[25]

In the military context, this dichotomy requires the preservation of a controlled disequilibrium between the general aim and the specific missions. Tactical missions should correspond to the general aim. Since these objectives are intangibly defined at the strategic level, and the mechanical performance is the domain of tactics, the acute importance of the operational level becomes clear. Only on this level can the abstract and mechanical extremes be fused into a functional formula, through the maintenance of cognitive tension.

The synergetic characteristic derives from the former two. According to Bertalanffy, the system approach demonstrates, in its sheer substance, the tangibility and prominence of wholes, which are dynamic by nature and are not just the sum of basic elements.[26] This notion is based both on the structural attributes of the system and on the nature of the existing interaction between its components. Whereas in linear complexes the result of the interaction can be defined as *summative*, the interaction of deep structured systems invariably results in *constitutive* effects.

The last notion sheds a somewhat different light upon the myth of quality. This myth, which prevails in certain armed forces, claims that quantity is insignificant, and it is only the quality that counts.[27] However, as we have seen, the importance of quantity derives from the basic fact that it constitutes one of the three cardinal factors in the system's efficiency. While it is true that the nature of the interrelations between the quantitative components of the system determines the quality of the final product, this very nature is influenced by the magnitude of the mass. Bertalanffy's summary illuminates this rather vague synergetic phenomenon:

> The meaning of the somewhat mystical expression, 'the whole is more than the sum of its parts' is simply that constitutive characteristics are not explainable from the characteristics of isolated parts. The characteristics of the complex, therefore, compared to those of the elements, appear as *new* or *emergent*.[28]

The last of the interaction's attributes to be described by Bertalanffy concerns its somewhat chaotic nature. System's occurrences are

generally conducted towards situations of maximum probability and system's laws are, therefore, essentially 'Laws of Disorder' – the outcome of unordered statistical events.[29] In military operations this last notion becomes immediately apparent. The idea of 'organized chaos' reflects the constant contradiction between the random nature of such operations and the traditional trend to institutionalize their study in scientific patterns.

THE OPERATIONAL DIMENSION

In his revealing book dealing with the broadest aspects of modern strategy, Edward Luttwak not only disclosed the essential problem in the Western perception of the operational level of war, but also rationalized it and put it into a pertinent context:

> It is a peculiarity of English language military terminology that it has no word of its own for what stands between the tactical and strategic, to describe that middle level of thought and action wherein generic methods contend and battles unfold in their totality.[30]

The Western failure to coin a term to cover the operational field indicates, first and foremost, the lack of cognition regarding that field. Once a term was adopted from a foreign setting, cognition followed suit. In Luttwak's definition, the most conspicuous indicator of the operational level concerns its intermediary location. Another identifying mark, noted by Luttwak, relates to its integrative nature.[31] The operational level, not only bridges between the strategic and the tactical levels, but also combines the unique qualities and characteristics of each of these levels, i.e. abstract contemplation and mechanical action. Furthermore, the meeting of the traditional approaches representing tactics and strategy that transpires within the operational level radiates a certain tension. This unique tension was observed and noted by Luttwak.

The introductory attempt of the new American field manual to explain the holistic structure of modern warfare illuminates additional aspects of the operational level:

> War is a national undertaking which must be coordinated from the highest levels of policymaking to the basic levels of execution. Military strategy, operational art, and tactics are the broad divisions of activity in preparing for and conducting war. Successful strategy achieves national and alliance political aims at the lowest possible cost of lives and treasure. Operational art translates those aims into effective military operations and campaigns. Sound tactics win the battles and engagements which produce successful campaigns and operations.[32]

This introduction provided the basic terms for the subsequent exposition of the 'Airland Battle' doctrine and rationalized the operational level by anchoring it in the national-political system and in international relations. The clarification of the entire structure of political-military relations highlights the sequential nexus between its various layers and also reveals the means by which the discourse between them is induced through the definition of the aim. But above all, the exposition manifests the dominance of the operational level in modern warfare: it is within this level, and by means of thorough planning and systematic conduct of operations, that abstract definitions are transformed into practical actions. Moreover, it is only through operational insight that the numerous tactical engagements can be assembled into a coherent occurrence, leading to the achievement of the strategic aim.

A brief examination of the Russian definition of the military term, *operation*, will emphasize the identity between the operational level and Bertalanffy's concept of the universal system:

> A totality of battles, strikes and manoeuvres of various types of forces united by mutual aims, missions, location and timing, conducted simultaneously or successively according to a single concept or plan aimed at accomplishing goals in a theatre of military operations, in a strategic direction or operational directions – in a predetermined period of time.[33]

Thus, operation constitutes the entire whole or complex of warlike actions governed by an identical concept, and directed towards attainment of the same aim. The quantitative element of matter is provided by the fighting mass. The physical framework for the operational occurrence is comprised of the factors of time and space. The variety of species is reflected through the diversity of arms and forces, and the system's components are represented by the main formations and combat groupings. The interaction between the components is reflected through the manoeuvre, which is based on a unified plan. The substance of the operational plan consists of the strategic aim, which indicates a predetermined definition of the entire operational accomplishment. The division of this aim into operational objectives and tactical missions creates the cognitive tension that moves the system towards its final objective. And, finally, the linkage between the aim and the combined manoeuvre reflects the synergetic postulate, the coherence of the operational action, and its continuity.

Therefore, one can rightly claim that the operational level is the implementation of the universal system in the military sphere.[34] The essence of this level, as the intermediary field between strategy and

tactics, is the preparation, planning, and conduct of military operations in order to attain operational objectives and strategic aims.[35] As stated above, the increase in the fighting mass from the beginning of the nineteenth century precipitated the expansion of warfare, in both space and time. Consequently, the polarization between strategy and tactics became so great that it was almost impossible to conduct war in a dynamic manner. Tactics, focusing entirely on the mechanical dimension of warfare, totally lacked the cognitive tools needed to merge and direct the numerous engagements towards attaining the strategic aims. On the other hand, strategy, leaning primarily on abstract definitions of aims and policies, lacked the ability to translate its intentions into mechanical terms.

An archaic inclination towards perpetuating the misconceptions of the Napoleonic experience, and a simplistic and coercive attempt to solve the problems suggested by modern warfare through a precipitous enlargement of the fighting mass, delayed the emergence of an operational cognition for more than a century. The political, strategic and tactical functions in the Napoleonic Wars were incorporated in a single entity, i.e. in Napoleon himself, and for a while the acuteness of the operational level seemed to decrease. However, after 1806, the dimensions of the armies, as well as the political-strategic complexities, grew to such proportions that the application of operational patterns of thought became imperative.

The significance of the operational dimension was recognized in the Soviet Union as early as the 1920s. In an essay, written in 1926, Mikhail Nikolaevich Tukhachevskii, at the time the Chief of Staff of the RKKA (Red Army of Workers and Peasants) and the dominant figure in the development of the Deep Operation theory, indicated the need for a new cognition, compatible with the challenges of modern warfare:

> Modern tactics are characterized primarily by organization of battle, presuming coordination of various branches of troops. Modern strategy embraces its former meaning: that is the 'tactics of a theatre of military operations'. However, this definition is complicated by the fact that strategy not only prepares for battle, but also participates in and influences the course of battle. Modern operations involve the concentration of forces necessary to deliver a strike, and the infliction of continual and uninterrupted blows of these forces against the enemy throughout an extremely deep area. The nature of modern weapons and modern battle is such that it is impossible to destroy the enemy's manpower by one blow in a one-day battle. Battle in modern operations stretches out into a series of battles not only along the front but also in depth until that time when either the enemy has been struck by

> a final annihilating blow or the offensive forces are exhausted. In that regard, modern tactics of a theatre of military operations are tremendously more complex than those of Napoleon. And they are made even more complex by the inescapable condition mentioned above that the strategic commander cannot personally organize combat.[36]

Although this early presentation predated Tukhachevskii's theoretical brilliance and perfection that were to emerge in the 1930s, it already recognized the limitations of strategy and tactics in the modern context. Furthermore, in his presentation, Tukhachevskii extracted the idea of 'destruction' (*Vernichtung*), that dominated European military thinking for more than a century, from the operational context, and replaced it with the idea of 'operational shock' (*udar*), or system disruption. And finally, he highlighted the aspects of depth, continuity, synergism and wholeness, and emphasized the crucial need for a new theoretical basis.

It was only in 1982 that Colonels L.D. Holder and H. Wass de Czege confirmed that the cognitive crisis, which must precede any theoretical revolution, had at last transpired in the US armed forces:

> The basic question why doctrine was changed can be answered simply: Army commanders became convinced as a result of their field training and war games that they would be unable to defeat the Soviets using the doctrine of 1976.[37]

Other evidence for the process of disillusionment which the US Army went through was provided by General De Puy, who held the post of Head of TRADOC (Training and Doctrine Command), in the mid-1970s:

> Although 100-5 is called operations, we were thinking tactics. That was a fatal flaw. We were wrong in not grasping that. None of us had studied the military business at the operational level very carefully or thoroughly or well.[38]

Nevertheless, the complete perception of the operational level as a distinct field of knowledge took long to mature. Only after thoroughly comprehending the unique problems of the operational level did the Americans realize that the mere existence of a new field manual did not necessarily supply the cognitive dimensions of the operational level. Four years after the publication of the 1982 edition of *FM 100-5*, L.D. Holder indicated the real turning point, when he realized that the operational level demanded from the commanders performing within its boundaries, cognitive faculties, which differed distinctly from the traditional ones:

> Formally distinguishing operational art from tactics is far more than a

> semantic exercise . . . As the link between strategy and tactics it governs the way we design operations to meet strategic ends and the way we actually conduct campaigns.[39]

The introduction of the term 'operational art' in the 1986 field manual marked the definite recognition of *creativity*, as the basic quality required from operational commanders.[40] By replacing the term 'operational level', employed in the 1982 manual, with 'operational art', the 1986 manual made a perceptional breakthrough and laid the foundations for a long ensuing debate.

At last the Americans managed to perceive the operational field as a new and distinct cognition, consequently abandoning the artificial and extraneous, categorization of levels of war. The American definition also indicated that despite its theoretical determinants, the operational field remained essentially concerned with practical activities. In its final emphasis, the definition pointed out that the context for expressing operational art was provided by means of theatre and campaign. In other words, despite the fact that the operation stemmed directly from the strategic aim, it still remained autarkic within the scope of that aim.

Basically, the American definitions of campaign and theatre now resemble those of the Russians. Nevertheless, since the Russian definitions reflect the general methodology of perceiving the operation in a more detailed manner, and preceded the American in originality, they should be used as a reference for the discussion.

Since the Russians conceive of theatre as a triangular relationship: warfare – mission – space, strategic aims are realized by means of combined warfare which unfolds within a defined geographical terrain. Thus, the demarcation of the operational theatre is based on two types of parameters: cognitive and geographical. The former are hierarchically structured and comprise a strategic aim (*strategicheskaia tsel'*), strategic missions (*strategicheskie zadachi*), and operational objectives (*operativnye zadachi*).[41] The geographical parameters are structured in an order that corresponds to the cognitive parameters, and they comprise a theatre of military operation (*teatr voennykh deistvii*), strategic directions (*strategicheskie napravleniia*), and operational trends (*operativnye napravleniia*).[42] Thus, the theatre represents a territorial integrity related to a complete aim, a specific period of time, and a defined magnitude of force. Through this integrity the coherence, continuity and independence of the operational command are established.

The campaign (*kampaniia*), lacking a unifying plan, constitutes a more general entity than the operation. The campaign, which occurs

within the limits of the theatre, is composed of a complex of operations and actions, aimed at accomplishing a strategic goal. The campaign, like the theatre, is related to a comprehensive aim and a defined framework of time, space and force, and is conducted by an independent strategic command.[43]

Until recently 'operational' commonly described a force grouping, larger than a division or corps. Nowadays, however, this meaning has somewhat lost its relevance because attention tends to focus on the linkage between the action and the strategic aim, and also because of technology's contribution in improving the ability to perform special operations. For example, a patrol sent out to acquire a piece of intelligence of strategic value, or a commando raid aimed at a strategic target might well be regarded as operational, despite the fact that such tasks are performed by small units.

In order to provide a theoretical framework for the examination of operational matters by critical and scientific criteria, an attempt should be made to outline the essence of Bertalanffy's arguments and the universal experience of modern warfare. In this study a concept, plan, or any warlike act will be defined as 'operational', only if it responds positively to the following criteria:

* It must reflect the *cognitive tension*, transpiring from the polarization between the general orientation towards the strategic aim and the adherence to the tactical missions.

* It must be based upon industrious manoeuvre, expressing the dynamic interaction between the various elements within the system, as well as the relationship between the general action and the strategic aim.[44]

* The planned action should be *synergetic*, i.e. throughout its entirety, represented by the initial aim, the system should yield a general product that is significantly greater than the linear arithmetic sum of its components' accomplishments. Moreover, in order to be regarded as operational, the matter must reflect the notion of synthesis, through the aspects of combined arms combat, amalgamation of the various forms of warfare, and the integration of the various forces and formations within several geographical units and different dimensions of time.

* Whereas at the tactical level and in the technological context the mechanism of destruction is prevalent, an operation should aim towards the disruption of its opponent's system.

* It must reflect a contemplative attitude towards the factor of randomness which expresses the chaotic dimension in the interrelation between contentious systems.

* An operational plan should be of a non-linear nature, namely, it should be hierarchically structured and express depth.

* An operational act must reflect a deliberate interaction between the notions of manoeuvre and attrition. The importance of this interaction derives from the basic nature of the operational level that embraces erosion, being expressed by tactics, and manoeuvre, which is the method of attaining the strategic aims.

* Since an operational plan or action relies on the strategic definition of aims, restrictions, and the appropriate allocation of resources, it constitutes a completely independent entity and must thus be regarded as autarkic within the scope of its mission or aim.

* Finally, in order to be regarded as operational, a concept, plan or act must be related to a broad and universal theory.

THE AIM – AN ESSENTIAL TRIAD[45]

Even a brief study of the theory of the general system makes it clear that the aim of a system constitutes its brain, its heart, and its self-regulating agency. We will now consider how this essential triad is reflected in the military field of operations.

As has already been observed, the aim is a predetermined definition which reflects the entire accomplishment or effect of the system's endeavour, before its occurrence; in this respect, it is the cognitive compass which provides the manoeuvre with its positive direction. Obviously, foreseeing the consequence prior to the act's materialization requires creative faculties. The formulation of the operational aim, therefore, expresses the art at its best.

The definition of the aim is a complicated process which is reflected in the coherent planning of the entire operation. The conspicuous landmarks along this hierarchic process are:

1. The formulation by the supreme political authority of the political-strategic aims and limitations, which defines the strategic objectives and restrictions and allocates the required resources, through a dialogue involving the strategic authorities.

2. The articulation of the operational concept and the definition of the main operational objectives by the relevant strategic-operational authority, which formulates the operational plans and defines the tactical missions by the various operational commands.

3. The creation of battle plans by the tactical levels of command for the tactical missions.

Since the process of developing the operational plan is hierarchic in nature, with each stage dependent on its precursor, the initial aims must be logical, realistic and attainable from the very beginning. Therefore, assuming that the political authority behaves rationally, the formulation of the introductory aim virtually dictates the need for a dialogue at the highest level between the politicians and soldiers.[46] Moreover, in order to preserve consistency between aims, objectives and missions all along the hierarchic ladder, in both the planning and implemental phases, professionalism, operational insight and a conceptual denominator common to all the numerous participators in the operational process becomes imperative. Yet, what is even more obvious is the fact that at the implemental stage it is mainly through the existence of the cognitive tension that the preservation of the above-mentioned consistency is assured.

As has already been noted, the breakdown of the system's aim into concrete objectives and detailed missions provides the system with its essential dynamism. Thus, in this respect the aim resembles the functioning of the heart. In practical terms, the incentive for the cognitive tension is generated through the operational commander's intention and the tactical commander's adherence to the missions they have been assigned. However, the stimulus that provokes the culminating points in this tension is provided by the turbulent and random nature of the operational environment. Out of this context emerges the acute importance of the commander's intention-determined disposition, aimed at curbing the natural inclination of the fighting echelons to over-identify with the tactical mission.[47] But more important, the coherence of the commander's intention or aim is the means for reducing the repercussions of friction.[48]

The self-regulating aptitude of a fighting system (operational entity) can be recognized by its ability to overcome external disturbances and restore its operational equilibrium, a procedure which enables it to adhere to its final objectives. This function is performed by the aim, although in a more intricate manner than seems apparent.

The framework for launching an operation is a violent contest between two belligerent systems, and, naturally, each of the contending systems strives to defeat its rival, and, at the same time, to frustrate the rival's efforts to bring defeat upon it. This means that operational aims uniquely combine two aspects, one positive and the other negative. And since operations constitute the consequence of the performance of military systems, which are goal-oriented in principle, it means that depriving the rival system of its ability to attain its goal reflects the negative aspect of one's own aim. Moreover, separating the system from its brain and heart, both